BRAC CLEANUP PLAN NAS FORT WORTH TX

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NAVAL AIR STATION FORT WORTH JRB CARSWELL FIELD TEXAS

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 189

BRAC Cleanup Plan (BCP)

Carswell Air Force Base,

(Currently known as Naval Air Station Fort Worth Joint Reserve Base, Carswell Field)

Fort Worth, Texas

Implementing President Clinton's Decision to Promote Early Reuse of Closing Bases by Expediting Environmental Cleanup

April 1995

BRAC Cleanup Plan (BCP) Carswell Air Force Base*, Fort Worth, Texas

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*Carswell Air Force Base was realigned in October 1994. The Navy is responsible for the operation of the base within the fenced perimeters. The portion of the base for which the Navy is responsible is referred to as the Naval Air Station Fort Worth Joint Reserve Base. In this document, the entire property is referred to as Carswell Air Force Base.

TAB

ACRONYMS

List of Acronyms

AAFES	Army and Air Force Exchange Service
ACC	Air Combat Command
ACM	Asbestos Containing Material
AF	Air Force
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFCEE	Air Force Center for Environmental Excellence
AFFF	aqueous film-forming foam
AFRES	Air Force Reserve
AGE	aerospace ground equipment
ANSC	area of no suspected contamination
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirements
ASC	Aero Systems Center
AST	aboveground storage tank
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
BW	Bomb Wing
CAFB	Carswell Air Force Base
CAM	Continuous Automated Monitoring
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFC	chlorinated fluorocarbon
CFR	Code of Federal Regulations
COE	U.S. Army Corps of Engineers
CRA	Carswell Redevelopment Authority
CRP	Community Relations Plan
CWA	Clean Water Act
DBCRA	Defense Base Closure and Realignment Act of 1988 and Defense Base Closure and Realignment Act of 1990, collectively
DD	Decision Document
DEIS	Draft Environmental Impact Statement
DERA	Defense Environmental Restoration Account
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DSMOA	Defense-State Memorandum of Agreement
EBS	environmental baseline survey
EC-CR	environmental compliance/closure-related

EC-MR	environmental compliance - maintenance related
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPC	Environmental Protection Committee
ES	Executive Summary
°F	degrees Fahrenheit
FBOP	Federal Bureau of Prisons
FEIS	Final Environmental Impact Statement
FFA	Federal Facility Agreement
FOST	Finding of Suitability to Transfer
FS	feasibility study
FW	Fighter Wing
FY	fiscal year
HQ	Headquarters
HRS	Hazardous Ranking System
IRA	interim remedial action
IRP	Installation Restoration Program
IRPIMS	Installation Restoration Program Information Management System
JRB	Joint Reserve Base
LTM	Long-Term Monitoring
LTRO	long-term remedial operation
MCL	maximum contaminant level
µg/l	micrograms per liter
mg/l	milligrams per liter
MOA	Memorandum of Agreement
MOGAS	leaded motor gasoline
MSL	mean sea level
N/A	Not Available
NA	Not applicable
NAS	Naval Air Station
NAS Fort Worth JRB	Naval Air Station Fort Worth Joint Reserve Base
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act, as amended
NFA	no further action
NFADD	No Further Action Decision Document
NFRAP	No Further Response Action Planned
NHPA	National Historic Reservation Act
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List

NPS	National Park Service
NRHP	National Register of Historic Places
NTU	normalized turbidity unit
OL	Operating Location
OPR	Office of Primary Responsibility
OU	operable unit
OWS	oil/water separator
PA	preliminary assessment
PA/SI	preliminary assessment/site investigation
PCB	polychlorinated biphenyl
pCi/l	picocuries per liter
pH	measure of acidity and alkalinity
POI	Points of Interest
POL	petroleum, oil, and lubricant
PP	proposed plan
ppb	parts per billion
PST	petroleum storage tank
QA/QC	quality assurance/quality control
RA	remedial action
RAB	Restoration Advisory Board
RAMP	Radon Assessment and Mitigation Plan
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act, as amended
RD	remedial design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RFI RP	RCRA Facility Investigation Remediation Plan
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
ROI	Region of Influence
RP	Remediation Plans
RPM	Remedial Project Manager
SAC	Strategic Air Command
SARA	Superfund Amendments and Reauthorization Act
SCS	Site Characterization Summary
SHPO	State Historic Preservation Officer
SI	site inspection
SWMU	solid waste management unit
TBD	to be determined
TCE	trichloroethylene
TDPW	Texas Department of Parks and Wildlife
TNRCC	Texas Natural Resource Conservation Commission

TPM	Technical Project Manager
TRC	Technical Review Committee
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TWC	Texas Water Commission
US	United States
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
WHCA	White House Communications Agency
WIMS-ES	Work Information Management System - Environmental Subsystem
WSA	weapons storage area

TAB

SUMMARY

CARSWELL AIR FORCE BASE BRAC CLEANUP PLAN

EXECUTIVE SUMMARY

Introduction

As part of President Clinton's Five-Part Plan to expedite environmental cleanup at closure bases, this Base Realignment (BRAC) Cleanup Plan (BCP) was developed as a road map for execution of the cleanup. All information required for Carswell Air Force Base (AFB) to meet an ultimate cleanup goal of calendar year 2013 is contained.

A BRAC Cleanup Team (BCT) has been established to develop and maintain this plan and to implement the environmental restoration activities required for property disposal. The BCT includes representatives from the U.S. Environmental Protection Agency (EPA), Texas Natural Resource Conservation Commission (TNRCC), and various other restoration and compliance decision makers.

This BCP contains the status, management and response strategy, and action items related to the ongoing Carswell Air Force Base environmental restoration and associated compliance programs. These programs support full restoration of the base property, which is necessary to meet the requirements for property disposal and reuse activities associated with the closure of the installation. The scope of the BCP considers the following regulatory mechanisms: the Base Closure and Realignment Act; National Environmental Policy Act; Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Community Environmental Response Facilitation Act; Resource Conservation and Recovery Act (RCRA); and other applicable laws.

The BCP is a planning document, and the information and assumptions presented may not necessarily have complete approval from the U.S. Air Force and/or federal and state regulatory agencies. The BCP is a dynamic document that will be regularly updated to reflect the current status and strategies of remedial actions. This document is the first in a series of updates/modifications and represents conditions and strategies as of April 1995.

Status of Disposal, Reuse, and Interim Lease Process

Carswell AFB officially closed on 30 September 1993. A portion of the base property, the cantonment, has been retained by the Air Force. The 1993 Defense Base Closure and Realignment Act (DBCRA) allowed for the retained cantonment to be expanded. A portion of the base was occupied by the 301 Tactical Fighter Wing Air Force Reserve. On 1 October 1994 the base was realigned and turned over to the Navy. It was renamed the Naval Air Station (NAS) Fort Worth, Joint Reserve Base (JRB) Carswell Field.

A Draft Disposal Plan is undergoing revision and will reflect the 1993 DBCRA decisions. The schedule for completion has not been determined.

The Air Force is in the process of issuing several small interim leases. Presently the golf course is the only interim lease.

Status of Environmental Restoration Program

Carswell AFB is not a National Priorities List (NPL) installation. The base has 19 Installation Restoration Program (IRP) sites and 1 site that may be included in the IRP. These 19 sites are grouped into three operable units (OU) based on previously designated reuse parcels. Eight sites are approved for No Further Action (NFA), and two sites are in approved remedial action (RA). Of the remaining sites, two are in remedial investigation (RI) (Landfill 6, Airfield Groundwater), three are in RA (POL Tank Farm, Flightline Ditch, Fire Training Area No. 2), one is in an RI/feasibility study (Base Service Station), one is undergoing a focused RI (Unnamed Stream), three are in a remedial design phase that has been delayed (Landfills 4, 5, Waste Burial Area), one is currently being monitored with an interim removal to take place in fiscal year (FY) 1994 (Off-Site Weapons Storage Area). OU 1 will be cleaned up first as Parcel A has been identified as the area having the highest reuse priority. OU 1 also contains the Airfield Groundwater site, which presents the greatest health threat due to off-site migration of contaminants. A Record of Decision (ROD) is planned for OU 1 in FY 1995. Treatment technology involving groundwater pumping and treating, along with air stripping should be in place by FY 1996. OU 2 will receive second priority as Parcel B. Contained in Parcel B is the Base Service Station Site. This site presents a serious problem due to off-site migration to the Trinity River. An ROD for this site is planned for FY 1995 with groundwater pump and treat being the proposed technology. OU 3 has not been identified as being a major health threat with the Low-Level Radium Disposal Site being the only IRP site in the area. However, due to the sensitivity of the contaminants, this site will undergo an interim removal in FY 1994. An ROD is expected before the end of FY 1994. The technology used for this site will consist of removal and off-site disposal of the source.

Most IRP sites are regulated under the base RCRA Part B permit issued by the U.S. EPA Region VI, with the TNRCC as lead regulatory agency.

Restoration-related compliance activities projects include closure or removal of underground and aboveground storage tanks, closure of active RCRA units, polychlorinated biphenyl (PCB) and asbestos management, wastewater discharge permit maintenance, oil/water separator cleanup, and Freon removal.

Cost

The total estimated cost for cleanup of Carswell AFB is $184 million. This includes all studies, designs, RAs, early removals, and long-term remedial operations (LTROs).

Key Restoration and Transferability Strategies and Schedules

Carswell AFB closed on 30 September 1993. The Environmental Impact Analysis Process for base disposal and reuse is in progress and the draft Environmental Impact Statement was released for public review in February 1993 and distributed in February 1994 for public review. The ROD, scheduled for publication in June 1994, will support the disposal decisions based on both the 1990 and 1993 DBCRA. In April 1993, the Secretary of the Air Force declared excess and surplus the off-base property known as Kings Branch to accelerate its disposal for civilian residential use.

Environmental restoration efforts have considered closure and reuse. An Environmental Baseline Survey (EBS) was prepared in December 1993 to determine the environmental condition of all base property. The EBS supported accelerated disposal of the surplus Kings Branch parcel. Environmental-condition-of-property determinations were conducted for specific parcels to support interim leases. A strategy to develop and maintain basewide environmental-condition-of-property and suitability-of-transfer maps has not been developed.

The strategy for transfer of responsibilities for base restoration and compliance activities from current management under the Air Combat Command to the Air Force Base Conversion Agency (AFBCA), Operating Location (OL) H, is detailed in a Memorandum of Agreement.

A draft Partnering Agreement between the OL-H and Air Force Plant 4 has been finalized. This agreement established responsibilities to be assigned during the remediation portion of the Air Force Plant 4 IRP for the trichloroethylene groundwater plume migrating from Air Force Plant 4 towards Carswell AFB property.

The BCP strategies are in the initial stages of development, and several technical/management guidelines need to be established to ensure that the environmental restoration objectives can be successfully integrated with the property transfer goals in an expeditious manner. Program restoration schedules currently extend through 2013.

Summary of Current BRAC Cleanup Plan Action Items

Table ES-1 provides a listing of recommendations and issues associated with environmental restoration, compliance, and technical/management action items guidance that require further evaluation and implementation by the BCT. A bottom-up review of this plan was conducted on 16 February 1994 with representatives of the BCT present. The BCT has found a number of ways to accelerate and cut costs. Over $10 million will be saved at five sites by using the Texas Risk Reduction Rules as opposed to total removal and disposal of contaminated soils. The clean up can be accomplished in 6 to 10 months instead of 2 to 3 years.

Table ES-1. BCT Action Items

Action Item	Program Review Item	Status		
		Complete	In Progress	To Be Performed
RESTORATION ACTIVITIES				
- Identify additional sites for interim actions, as appropriate	17, 19	X		
- Complete and implement CRP	14	X		
- Complete and maintain administrative record	14		X	
- OL-H to become member of AF Plant 4 TRC	14	X		
- Research and implement thermal treatment for POL-contaminated soils	15, 25		X	
- Assess environmental condition of off-base properties	9		X	
- Develop process to update and maintain environmental-condition-of-property map	9, 28		X	
- Identify and map areas suitable for transfer	9, 28	X		
COMPLIANCE ACTIVITIES				
- Develop pipeline removal/abandonment strategy	16	X		
- Designate essential and nonessential ASTs	16	X		
- Determine number and location of hazardous waste accumulation points to be closed	16, 18	X		
- Ensure tenant compliance with RCRA	16, 18	X		
- Review tenant hazardous waste management and spill prevention and response plans	16, 18	X		
- Disclose asbestos status to lessees	16	X		
- Disclose location of PCB capacitors to lessee/recipient	16, 20	X		
- Update annual PCB location documents	16, 20	X		
- Sample and prepare report for NPDES	16, 18	X		
- Disclose need for radon investigations	16	X		
- Identify OWSs for reuse	16, 18	X		
- Identify and apply for air emissions credits	16	X		
- Use recovered Freon as credit against Freon removal costs	16			X
MANAGEMENT AND ADMINISTRATIVE SUPPORT ACTIVITIES				
- Establish and maintain central data file (IRPIMS)	21			X
- Determine usability of historical data sets	21			X
- Implement data quality management for current and future projects	20		X	
- Identify and fill data gaps	22		X	
- Establish background concentrations of elements for use in risk assessments	23		X	
- Evaluate anticipated land use as criterion in risk assessment assumptions	28		X	

Community Involvement

A Restoration Advisory Board was formed on 26 January 1994 and is functioning well. Community representatives have been involved in the cleanup process and have been very approving of our efforts regarding clean up.

Compliance Program

The Environmental Compliance Program at Carswell AFB consists of removal of PCB transformers, underground storage tanks, hydrant fueling system, lead-based paint and chlordane surveys, and residual hazardous waste removals. These items will be addressed in FY 1995 with a cost in excess of $9.6 million. In addition, there are several sites requiring investigation and potential remediation that will be included as part of the Environmental Compliance-Closure Related Program. These include an Old Base Refueling Site, Grounds Maintenance Yard, Recreational Vehicle Parking Area, and Aerospace Museum Site. The cost of investigation and potential design and remediation will exceed $13 million and will extend through FY 1998 (including) LTRO.

Cultural Resources

The Historic Buildings Survey is complete. Facilities eligibilities for inclusion in the National Register of Historic Places include Building 218 (Golf Clubhouse), Building 233 (Golf Course Maintenance Shop), Building 260 (Hyde House), and Structure 1809 (Concrete Water Tower).

Natural Resources

Two jurisdictional wetlands and six non-jurisdictional wetland areas have been identified. There is no pending mitigation action that will require funding during FY 1994. There are no threatened or endangered (aquatic or biotic) species known or suspected to exist on the installation or its off-base property.

Technical/Regulatory Issues

A major regulatory issue was the possible inclusion of Carswell AFB on the NPL. It has been determined that Carswell AFB is not a NPL site. A second issue is the new requirement by the TNRCC to reinvestigate 48 solid waste management units (SWMUs) once designated as NFA sites in the RCRA Facilities Assessment, January 1989.

Summary of Items to Complete

It is imperative that the BCT continue to meet on a monthly basis to discuss the progress of the Airfield Groundwater Site Characterization and the reinvestigation of the 48 SWMUs as requested by the TNRCC.

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CHAPTER 1.0

Chapter 1
Introduction and Summary

As a result of past waste and resource management practices at Carswell Air Force Base (AFB), some areas have become contaminated by various toxic and/or hazardous compounds. In response, an environmental restoration program has been initiated at the base. In addition, compliance with applicable laws and regulations ensures that present waste and resource management practices conducted by the Air Force and property lessees are carried out in a manner that protects human health and the environment.

The purpose of this Base Realignment and Closure (BRAC) Cleanup Plan (BCP) is to summarize the current status of the Carswell AFB environmental restoration and associated environmental compliance programs, and present a comprehensive strategy for implementing response actions necessary to protect human health and the environment. This strategy integrates activities being performed under the Installation Restoration Program (IRP) and the associated environmental compliance programs to support restoration of the base. The BCP is a dynamic document that will be regularly updated to incorporate newly obtained information and reflect the completion or change in status of any remedial actions (RAs). This BCP was prepared with information available as of April 1995.

This BCP is a planning document. Information, schedules, and RAs presented in this BCP do not necessarily represent those that have been or will be approved by the Air Force or federal and state regulatory agencies. It was necessary to make certain assumptions and interpretations to develop the estimates. As additional data becomes available, implementation programs and cost estimates could be dramatically altered. Such changes would then be reflected in future updates to the BCP.

Chapter 1 describes the objectives of the environmental restoration program, explains the purpose of the BCP, introduces the BRAC Cleanup Team (BCT) formed to review the program, and provides a brief history of the base.

Chapter 2 summarizes the current status of the Carswell AFB property disposal planning process and describes the relationship of the disposal process with other environmental programs.

Chapter 3 summarizes the current status and past history of the Carswell AFB IRP and environmental compliance programs, community relations activities that have occurred to date, and the environmental condition of base property.

Chapter 4 describes the basewide strategy for environmental restoration, including the strategies for dealing with each operable unit (OU) on base. This chapter also includes plans for addressing waste sources managed under the underground storage tank (UST) program hazardous waste management program, and other associated compliance programs related to restoration, base closure, leases, and the military area interactions.

Chapter 5 provides master schedules of planned and anticipated activities to be performed throughout the duration of the environmental restoration program, including associated compliance activities.

Chapter 6 describes specific technical and/or administrative issues to be resolved and presents a strategy for resolving these issues.

In addition to the main text, the following appendices are included in this document:

- Appendix A - tables presenting restoration and compliance funding requirements, as well as a summary table of past costs for the environmental restoration program
- Appendix B - technical documents and data loading summary, listings of previous environmental restoration program deliverables by program and by site
- Appendix C - summaries of decision documents (DDs) for which an RA was selected
- Appendix D - summaries of each DD for each site or OU for which a no further action (NFA) decision has been made
- Appendix E - working conceptual models for sites, zones, or OUs
- Appendix F - a property acquisition summary, maps of non-AF tenants, proposed actions, and TCE concentrations, as well form 1391s for Carswell AFB.

1.1 Environmental Response Objectives

The objectives of the base closure environmental restoration program at Carswell AFB are as follows:

- Protect human health and the environment.
- Strive to meet reuse goals established by service and community.
- Comply with existing statutes and regulations.
- Conduct all IRP activities in a manner consistent with Section 120 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and Community Environmental Response Facilitation Act (CERFA).
- Establish priorities for environmental restoration and restoration-related compliance activities so that property disposal and reuse goals can be met.
- Initiate selected removal actions to control, eliminate, or reduce risks to manageable levels.
- Characterize health and safety risks associated with releases of hazardous substances, pollutants, contaminants, or hazardous wastes related to property transactions by parcel.
- Coordinate Carswell AFB environmental cleanup with Air Force (AF) Plant 4 IRP through effective project management and technical information exchange.

- Effectively transfer the management and execution of the IRP and environmental compliance/closure-related (EC-CR) program to the Air Force Base Conversion Agency (AFBCA).

1.2
BCP Purpose, Updates, and Distribution

This BCP presents, in summary fashion, the status of the Carswell AFB environmental restoration and compliance programs and the comprehensive strategy for environmental restoration and restoration-related compliance activities. The BCP lays out the response action approach at the installation in support of base closure. In addition, the BCP defines the status of efforts to resolve technical issues and identifies specific strategies, BCT action items, and waste implementation schedules for environmental restoration activities, so that continued progress and implementation of property transfers can occur.

1.3
BRAC Cleanup Team/Project Team

A BCT has been established to develop and maintain the BCP and to implement the environmental restoration activities required for property disposal. The BCT includes representatives from environmental restoration and compliance program decision makers, and technical, operation, and administrative specialists.

The AFBCA has established an Operating Location (OL) for each closing base. OL-H is a team of AFBCA representatives assigned to perform the following for Carswell AFB: coordinate closure activities, maintain a caretaker force, and serve as an Air Force liaison supporting base property disposal and interim leases. OL-H will remain the on-site responsible party for areas outside the 301 Tactical Fighter Wing (FW) area until the disposal of all base properties is complete.

The BCT will consist of representatives from the AFBCA/OL-H; the Air Force Center for Environmental Excellence (AFCEE); the U.S. Environmental Protection Agency (EPA) Region VI; the Texas Natural Resource Conservation Commission (TNRCC), the Carswell Redevelopment Authority (CRA); the U.S. Army Corps of Engineers (COE), Fort Worth District, and Aero Systems Center and various contractors. The BCT is led by the BRAC Environmental Coordinator (BEC). The BEC has been at AFBCA/OL-H since May 1993. Table 1-1 lists the team members and specifies their roles and responsibilities. The BCT works to ensure that regulatory preferences are considered in the restoration and compliance activities. Because most base environmental restoration is regulated under a state-issued Resource Conservation and Recovery Act (RCRA) Part B permit, the TNRCC has become the lead regulatory agency in reviewing documents, briefing the progress of the IRP and compliance activities, and determining appropriate response actions.

Table 1-1. Current BRAC Cleanup Team/Project Team Members

(BRAC CLEANUP TEAM MEMBERS)			
Name	**Title**	**Phone**	**Role/Responsibility**
Mr. Frank Grey	AFBCA/OL-H	(817) 731-8973, Ext. 17	Chief Environmental Engineer
Mr. Gary Baumgarten	U.S. EPA Region VI	(214) 655-6749	EPA Regulator
Mr. Geoff Meyer	TNRCC	(512) 239-2577	State Regulator
CORE TEAM MEMBERS			
Mr. Ray Leach	CRA	(817) 377-8062	Program Manager
Cpt. Joe Feaster	HQ AFCEE/ESB	(210) 536-5275	AFCEE Team Chief
Mr. Olen Long	AFBCA/OL-H	(817) 731-8973	OL-H Chief
Ms. Debbie Perrin	COE, Ft. Worth District	(817) 334-3221	Project Manager
Mr. Randy Varner	301 TFW, Carswell AFB	(817) 782-6277	Environmental Chief, 301 Tactical FW
CONSULTING MEMBERS			
Mr. John Doepker	ASC/EMVR	(513) 255-7716	AF Plant 4, RPM
Mr. Randy Tarbell	AFCEE/CCR-D	(214) 767-4672	Program Manager
Mr. Ray Hatch	HQ AFBCA/SW	(703) 696-5540 DSN 226-5540	Program Manager, SW Region
Mr. Felix Amerasinghe	HQ AFBCA/SW	(703) 696-5543 DSN 226-5543	Environmental Engineer, SW Region
Mr. Dave Bragg	Booz, Allen, Hamilton	(210) 927-4300	Program Manager
Cmdr Ed Cox	NAS Dallas	(214) 266-6811	Environmental Officer
Mr. Ed Lohr	South NAVFAC	(803) 743-0355	Program Manager
Mr. Gregory Perry	TANG	(214) 269-3581	Program Manager
Mr. Carl Loop	South NAVFAC	(803) 743-0528	Program Manager
Lt John Gorman	NAS Dallas	(214) 266-6811	Environmental Officer
Mr. Galen Robbins	NAS Dallas	(214) 266-6811	Compliance Manager
Mr. Tim Sewell	TNRCC	(214) 298-6171	State Regulator
Mr. Allan Posnick	TNRCC	(512) 239-2332	State Regulator
Mr. Lon Biasco	U.S. EPA Region VI	(214) 655-6673	U.S. EPA Regulator
Mr. Thomas Edwards	Attorney General's Office		State Official
Mr. Nadira Kabir	TNRCC	(512) 239-2331	State Regulator
Cpt. James Rogers	COMNAVRESFOR	(504) 948-5711	Environmental Officer
LCDR Michael W.S. Hayes	COMNAVRESFOR	(504) 948-5303	Legal Council

The initial BCT meeting of the BCT was conducted on 12 January 1994. An Environmental Protection Committee (EPC) has also been formed. These meetings provide a forum to discuss ongoing restoration and compliance status and issues between the 301 Tactical FW, AFBCA, and other BCT meetings.

1.4
Brief History of Installation

Carswell AFB is located in north-central Texas in Tarrant County, 8 miles west of downtown Fort Worth. The base property, totaling 2,555 acres, consists of the main base and two noncontiguous parcels (see Section 1.5). The main base comprises 2,264 acres and is bordered by Lake Worth to the north, the West Fork of the Trinity River and Westworth Village to the east, Fort Worth to the northeast and southeast, White Settlement to the west and southwest, and AF Plant 4 to the west. The area surrounding Carswell AFB is mostly suburban, including the residential areas of the cities of Fort Worth, Westworth Village, and White Settlement.

The existing land uses in the immediate vicinity of the base include industrial, commercial, residential, and recreational uses. Off-base land use is shown in Appendix F.

The land uses west of the base are predominantly residential and industrial. These include single-family residences, supporting commercial centers, AF Plant 4, and an industrial complex in White Settlement.

The predominant development south of the base is the commercial area located at the Interstate 30 and State Highway 183 interchange. This area includes a discount-oriented retail center, a regional shopping mall, and a convenience center.

Various types of residential development occur southeast of the base, north of Interstate 30. South of River Oaks Boulevard and Roaring Springs Road are country club estates and upscale townhouses. Further south are middle- to upper-income, single-family housing, and multi-family units mixed with commercial office development. Single-family housing is also found on the eastern side of the base, from the Kings Branch housing tract north to Meandering Road.

Public/recreational land uses occur north of the base, surrounding Lake Worth. Public access along the southern shore of Lake Worth is currently restricted due to Carswell AFB activities. A fish hatchery, YMCA camp, and private recreation lands occur along the West Fork of the Trinity River, northeast of the base.

The area surrounding the Off-Site Weapons Storage Area (WSA) is primarily rural. A residential development is located south of White Settlement Road.

Carswell AFB is located within the Grand Prairie section of the Central Lowlands Physiographic Province. The area is characterized by broad terrace surfaces sloping gently

Table 1-2. History of Installation Operations

Period	Type of Operation	Weapon Systems	Hazardous Substance Activities	Map Reference (see Figure 1-1)
Pre-1941	Woods and pastures	None	Unknown	1
1941-1946	Bomber training base	B-24, B-25, B-26, B-32	Most waste oils, recovered fuels, spent solvents and cleaners burned at fire training areas; some disposed of through contractor removal, landfill disposal, and discharge to storm and sanitary sewer	2
1946-1948	Bomber training base	B-29		2
1948-1958	Bomber training base	B-36B, B-36D		2
1958-1964	Bomber training base and air refueling operations	B-52D, B-58, KC-135		2
1964-1968	Bomber training base and air refueling operations	B-52D, KC-135		2
1968-1971	Bomber training base and air refueling operations	B-52D, KC-135, FB-11		2
1971-1985	Bomber training base and air refueling operations	B-52D, KC-135, F-4	Most waste oils, spent solvents, and cleaners disposed of through contractor removal; recovered. JP-4 stored and burned at fire training area, some wastes disposed of in landfills or sanitary drains	2, 3
1975-1982	B-52D, KC-135, F-4	B-52D, KC-135, F-4	Most waste oils, spent solvents and cleaners removed through service contract; recovered JP-4 stored and burned at fire training area; PD-680 discharged to OWS	2, 3, 4
1982-1992	B-52D, B-52H, KC-135, F-4	B-52D, B-52H, KC-135, F-4	Waste oils, solvents, and cleaners collected and stored at accumulation points and disposed of through DRMO; recovered JP-4 stored and burned at fire training area; waste oils and PD-680 recovered from OWS and disposed of through DRMO	2, 3, 4, 5

eastward, interrupted by westward-facing escarpments. The topography of the base is fairly flat, except for areas near Farmers Branch Creek and the Trinity River. Elevations average 650 feet above Mean Sea Level (MSL) and range from 550 feet above MSL in the east to 690 feet above MSL in the southwest.

The climate in the Fort Worth region is subtropical with mild winters and hot, humid summers. The average annual precipitation is 31.5 inches, with the majority falling between April and October. The average annual temperature is 66 degrees Fahrenheit (°F). July is the hottest month with an average monthly temperature of 86°F, while January is the coldest month with an average monthly temperature of 45°F. Temperature changes are rapid and often change 20° to 30° in several hours. The average annual relative humidity is 63 percent.

Prevailing winds are primarily southerly from March through November and northerly from December through February; the average wind speed is 8 knots. Severe thunderstorms with windspeeds of 65 knots and hail storms are common. Climate conditions in summer make tornado formations possible, although there is more property damage each year due to hail than to tornadoes.

In 1984, the IRP was initiated at Carswell AFB and began with a program records search conducted by CH_2M Hill, Inc. Since 1984, Air Force IRP studies have been conducted by several contractors, and have focused on the identification and characterization of waste disposal areas and solid waste management units (SWMUs) identified in the installation's RCRA Part B permit.

Pursuant to the Defense Base Closure and Realignment Act (DBCRA) of 1990, Carswell AFB was selected for closure and associated property disposal during Round II Base Closure Commission deliberations. This announcement initiated the closure and the disposal and reuse planning processes. Drawdown activities were initiated in 1992 and all 7 Bomb Wing (BW) aircraft were relocated by January 1993. The base officially closed on 30 September 1993. On 1 October 1994 the base was realigned and the Navy assumed control of the base. Carswell AFB was officially renamed the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB), Carswell Field. The AFBCA remains responsible for the cleanup of the base.

The area now known as Carswell AFB was originally a modest dirt runway built to service an aircraft manufacturing plant located where AF Plant 4 is now. When it was established in 1942, the installation was referred to as the Tarrant Field Airdrome and was originally under the jurisdiction of the Gulf Coast Army Air Field Training Command. Its mission was to provide transition training for the B-24 bomber pilots and it has served as a heavy bomber base ever since. The Strategic Air Command (SAC) assumed control of the installation in 1946 and the base served as headquarters for the Eighth Air Force. The base was renamed Carswell AFB in 1948 in honor of Fort Worth native, Major Horace S. Carswell. At that time, the 7 BW became the base host unit. In 1951, Headquarters 19 Air Division was located at Carswell AFB where it remained until September 1988, the longest tenure of any air division in SAC. Carswell AFB became home base for its first B-52s and KC-135s in 1956.

The Air Combat Command (ACC) assumed control of the base in 1992 with the disestablishment of SAC.

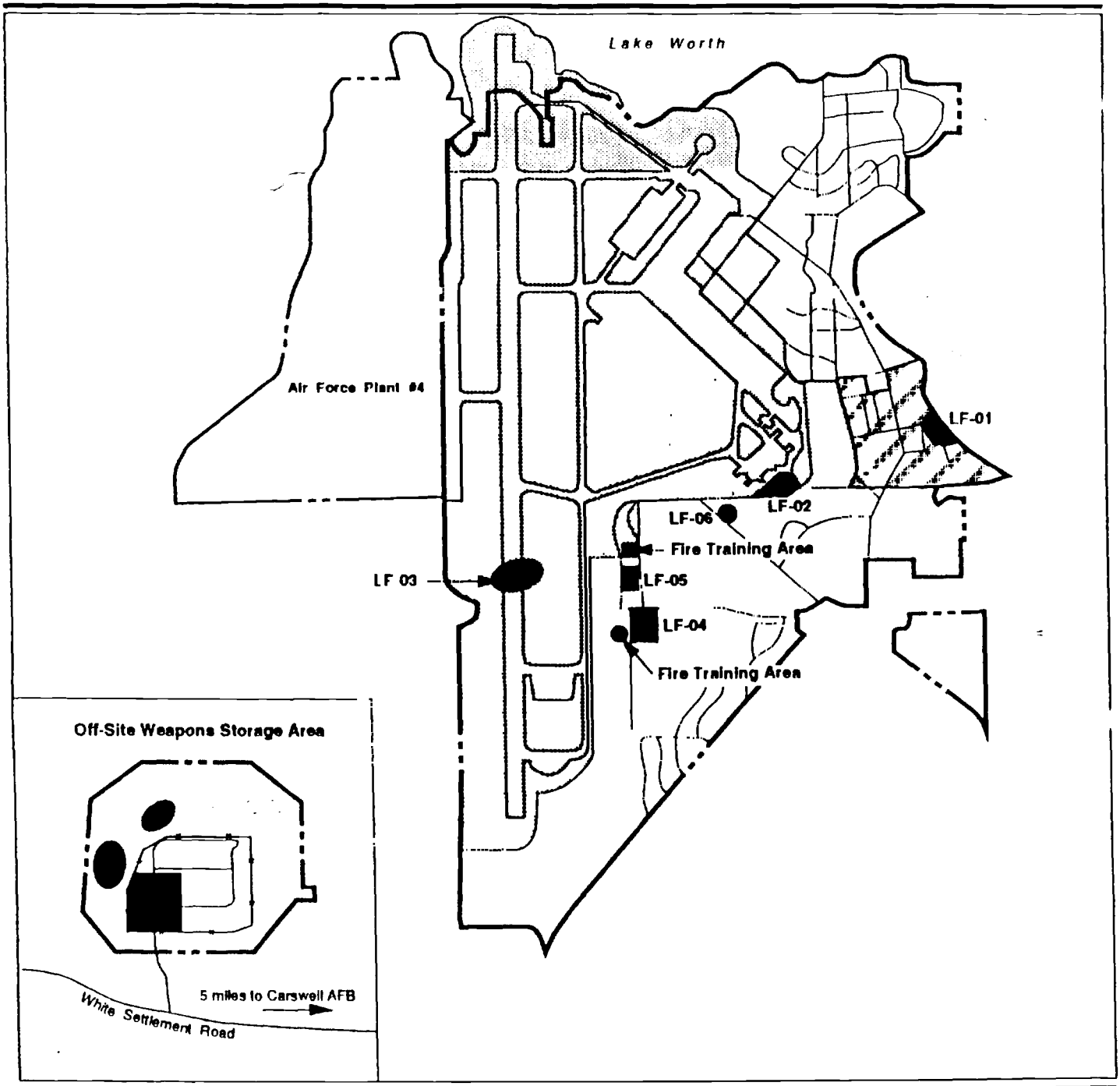
The majority of the base property was acquired in the 1940s with most of the property acquired from the city of Fort Worth in 1941; additional property including most of the south base, the hospital area, and the Off-Site WSA was acquired during the 1950s. Kings Branch and south base residential areas were acquired in 1960. Several miscellaneous additional properties totaling 22.06 acres have been acquired since 1970. Table 1-6 summarizes base property acquisition.

Wastes have been generated and disposed of at Carswell AFB since the beginning of industrial operations in 1942 (Table 1-2). Information regarding wastes was obtained from 7 BW records. The locations of past hazardous substance activities are shown in Figure 1-1. The major industrial operations at Carswell AFB now include: maintenance of jet engines, aerospace ground equipment (AGE), fuel systems, weapons systems, and pneudraulic systems; maintenance of general and special purpose vehicles; aircraft corrosion control; and nondestructive inspection activities. All of these operations generate wastes, primarily oils, recoverable fuels, spent solvents, and cleaners. Table 1-3 provides examples of hazardous waste-generating activities to provide a historical perspective. The years 1990 to 1992 are covered in the table.

The total quantity of waste oils, recoverable fuels, spent solvents, and cleaners that was generated during the 1970s and early 1980s is estimated to be approximately 55,000 gallons per year. Prior to the 1970s, the waste quantities were probably less because fewer aircraft were maintained at the base. Smaller amounts of liquid wastes are associated with pest and weed control activities at the base. Some of the chemicals used or in use are anticoagulant, baygon, diazinon, malathion, chlordane, organophosphate, and monosodium arsenate. Used containers are triple rinsed, punctured, and disposed of in dumpsters, along with the bags. Rinse waters from container and equipment rinsing are discharged to a tank. The full tank is pumped out for proper disposal. Before 1981, the rinse waters were discharged into a dry well sump. This sump has been identified as a potentially contaminated site.

Practices for past and present industrial waste disposal are summarized below:

- 1942-1970: The majority of waste oils, recovered fuels, spent solvents, and cleaners were burned at the fire department training areas during practice exercises. Some waste oils and spent solvents were disposed of through contractor removal, while some waste paints (contaminated with thinners and solvents), waste oils, and PD-680 are suspected of having been disposed of in the base landfills. Some waste oils, recovered fuels, spent solvents, and cleaners were also discharged to sanitary and storm sewers. These discharges primarily occurred at the wash racks. In 1955, an oil/water separator was installed to recover waste materials discharged from the wash racks. Materials from the oil/water separators were pumped out and disposed of through contractor removal. Discharge from the oil/water separators was, and still is, into the sanitary sewers.



EXPLANATION

- Airfield and Aviation Support Areas Acquired in 1940s
- Industrial Area Acquired in 1940s
- General Areas of Waste Disposal on Property Acquired in 1950s
- Fire Training Area used 1942 to 1962
- Fire Training Area used since 1963
- LF-04 Landfill Number
- Base Boundary
- Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Location of Past Hazardous Substance Activities

Figure 1-1

Table 1-3. Hazardous Waste Generating Activities
Page 1 of 7

Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
1015/Test Cell			Floor finish	2 gallons/month	Base disposal contract	1990-1992
			Hydraulic fluid	1 gallon/month	Base disposal contract	1990-1992
			JP-4	20 gallons/month	Base disposal contract	1990-1992
			Aircraft soap	1 gallon/month	Base disposal contract	1990-1992
			Engine gas path cleaner	2 gallons/month	Base disposal contract	1990-1992
			7808, 1010 Oil	5 gallons/month	Base disposal contract	1990-1992
1027/Aircraft Corrosion Control			Aircraft soap	55 gallons/month	Base disposal contract	1991, 1992
			PD-680	325 gallons/month	Base disposal contract	1991, 1992
1048/Maintenance Dock Fuel System			Methyl ethyl ketone rags	Unknown	DRMO	1990-1992
			PD-680	Unknown	Base disposal contract	1990-1992
			Isopropyl alcohol	Unknown	Base disposal contract	1990-1992
			Engine oil	Unknown	Base disposal contract	1990-1992
			Hydraulic fluid	Unknown	Base disposal contract	1990-1992
1050/Maintenance Hangar			PD-680	55 gallons/month	Base disposal contract	1990-1992
			Hydraulic fluid	0.25 gallon/month	Base disposal contract	1990-1992
			Lube oil	Unknown	Base disposal contract	1990-1992
			Citrikleen	Unknown	Base disposal contract	1990-1992
			Nickel/cadmium batteries	Unknown	DRMO	1992
			Spill residue	Unknown	DRMO	1992
1055/Avionics Shop			Freon/dump fluid	Unknown	Base disposal contract	1991
			PD-680	Unknown	Base disposal contract	1990
			PD-680	9.2 gallons/month	Base disposal contract	1991
1059/Hazardous Storage			Methyl ethyl ketone	Unknown	Base disposal contract	1991
			Media bead waste	Unknown	DRMO	1991
			Paint waste	Unknown	Base disposal contract	1991
			Cleaning compound	Unknown	DRMO	1991
			Paint stripper	Unknown	Base disposal contract	1991
			Water soluble oil	Unknown	Base disposal contract	1991
			Speedy Dry	Unknown	DRMO	1991
			Sand blaster waste	Unknown	DRMO	1991
1060			Paint	50 gallons/month	Base disposal contract	1990-1992

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Table 1-3. Hazardous Waste Generating Activities
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Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
1060 (Continued)			Hydrofluoric acid	0.125 gallon/month	Base disposal contract	1990-1992
			Alodine	10 gallons/month	Base disposal contract	1990-1992
			Paint remover	3 gallons/month	Base disposal contract	1990-1992
			Aircraft soap	10 gallons/month	Base disposal contract	1990-1992
			Surface stripper	3 gallons/month	Base disposal contract	1990-1992
			Methyl ethyl ketone	20 gallons/month	Base disposal contract	1990-1992
			Hot tank stripper	53.3 gallons/month	Base disposal contract	1990-1992
			Media bead waste	Unknown	DRMO	1991
			Water soluble oil	Unknown	Base disposal contract	1991
1140/Auto Hobby Shop			Safety Kleen	433.3 gallons/month	Base disposal contract	1990-1992
			Motor oil	250 gallons/month	Base disposal contract	1990-1992
			PD-680	55 gallons/month	Base disposal contract	1990-1992
1189/Headquarters Group			Potassium ferrocyanide	Unknown	DRMO	1990, 1991
			Perchloroethylene	Unknown	Base disposal contract	1990, 1991
			Methylene chloride	Unknown	DRMO	1990, 1991
1191/Vehicle Maintenance Shop			Paint and thinners	10 gallons/month	Base disposal contract	1990-1992
			Engine oil	150 gallons/month	Base disposal contract	1990-1992
			Safety Kleen	41.7 gallons/month	Base disposal contract	1990-1992
			Transmission and hydraulic fluid	50 gallons/month	Base disposal contract	1990-1992
			Antifreeze	50 gallons/month	Base disposal contract	1990-1992
			Battery acid	25 gallons/month	Base disposal contract	1990-1992
			Automotive fuel	20 gallons/month	Base disposal contract	1990-1992
			7808 Synthetic oil	Unknown	Base disposal contract	1990-1992
1194/Refueling Vehicle Shop			Antifreeze	5.8 gallons/month	Base disposal contract	1990-1992
			PD-680	4.6 gallons/month	Base disposal contract	1990-1992
			Transmission fluid	2 gallons/month	Base disposal contract	1990-1992
			JP-4	416.7 gallons/month	Base disposal contract	1990-1992
			Engine oil	20 gallons/month	Base disposal contract	1990-1992
			Safety Kleen	25 gallons/month	Base disposal contract	1990-1992
			Aircraft soap	10 gallons/month	Base disposal contract	1990-1992
1215/Base Engineering Administration			Miscellaneous items	Unknown	DRMO	1992
1250/Hazardous Storage			Miscellaneous items	Unknown	DRMO	1991

Table 1-3. Hazardous Waste Generating Activities
Page 3 of 7

Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
1251/Warehouse			Miscellaneous items	Unknown	DRMO	1990, 1992
1320/Base Engineering Maintenance Shop			Antifreeze	13 gallons/month	Base disposal contract	1990-1992
			Gas and diesel	9 gallons/month	Base disposal contract	1990-1992
			Battery acid	30 gallons/month	Base disposal contract	1990-1992
			7808 oil	13 gallons/month	Base disposal contract	1990-1992
			PD-680	9 gallons/month	Base disposal contract	1990-1992
			Transmission fluid	Unknown	Base disposal contract	1990-1992
1410/Jet Engine Maintenance Shop			JP-4	15 gallons/month	Base disposal contract	1990-1992
			PD-680	30 gallons/month	Base disposal contract	1990-1992
			7808 oil	27 gallons/month	Base disposal contract	1990-1992
			Multi-Sheen	5 gallons/month	Base disposal contract	1990-1992
			Carbon remover	10 gallons/month	Base disposal contract	1990-1992
			Hydraulic fluid	2 gallons/month	Base disposal contract	1990-1992
			Safety Kleen	31.7 gallons/month	Base disposal contract	1990-1992
			SE-377C	25 gallons/month	Base disposal contract	1990-1992
			Finger print remover	Unknown	Base disposal contract	1992
			Calibrating fluid	Unknown	Base disposal contract	Unknown
1413/Hazardous Storage			Carbon remover	Unknown	Base disposal contract	1991
			JP-4	Unknown	Base disposal contract	1991
			PD-680	Unknown	Base disposal contract	1991
			7808 synthetic oil	Unknown	Base disposal contract	1991
			Fingerprint remover	Unknown	Base disposal contract	1991
			Safety-Kleen	Unknown	Base disposal contract	1991
1414/Aircraft Support Equipment Shop Storage Facility			Antifreeze	80 gallons/month	Base disposal contract	1990-1992
			Gas, diesel, JP-4	165 gallons/month	Base disposal contract	1990-1992
			Citrikleen	55 gallons/month	Base disposal contract	1990-1992
			PD-680	80 gallons/month	Base disposal contract	1990-1992
			Hydraulic fluid	55 gallons/month	Base disposal contract	1990-1992
			Motor and synthetic oil	150 gallons/month	Base disposal contract	1990-1992
			Stop bath	5 gallons/month	Base disposal contract	1990-1992

Table 1-3. Hazardous Waste Generating Activities

Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
			Emulsifier	18.3 gallons/month	Base disposal contract	1990-1992
			Fixer	5 gallons/month	Base disposal contract	1990-1992
			Developer	23.3 gallons/month	Base disposal contract	1990-1992
			Dye penetrant	18.3 gallons/month	Base disposal contract	1990-1992
			Mercury batteries	Unknown	DRMO	1992
1415/Hazardous Storage			Diesel	Unknown	Base disposal contract	1991
			Motor gasoline	Unknown	Base disposal contract	1991
			Paint waste	Unknown	Base disposal contract	1991
			PD-680	Unknown	Base disposal contract	1991
			Hydraulic fluid	Unknown	Base disposal contract	1991
			Antifreeze	Unknown	Base disposal contract	1991
			JP-4	Unknown	Base disposal contract	1991
			7808 synthetic oil	Unknown	Base disposal contract	1991
			Engine oil	Unknown	Base disposal contract	1991
1418/Weapons and Release System Shop			PD-680	9.2 gallons/month	Base disposal contract	1991, 1992
1420/Aircraft Support Equipment Shop Storage Facility			PD-680	20 gallons/month	Base disposal contract	1990-1992
			Methyl ethyl ketone	0.04 gallon/month	Base disposal contract	1990-1992
			Soap	10 gallons/month	Base disposal contract	1990-1992
			Thinner	1.25 gallons/month	Base disposal contract	1990-1992
			Brake and hydraulic fluid	20 gallons/month	Base disposal contract	1990-1992
			7576 synthetic oil	Unknown	Base disposal contract	1992
			Cutting fluid	Unknown	Base disposal contract	1992
			Naphtha	Unknown	Base disposal contract	1992
			Lead-based paint	Unknown	Base disposal contract	1992
1425/Fire Station			Antifreeze	10 gallons/month	Base disposal contract	1990-1992
			Engine oil	40 gallons/month	Base disposal contract	1990-1992
			Hydraulic and transmission fluid	15 gallons/month	Base disposal contract	1990-1992
			Safety Kleen	7 gallons/month	Base disposal contract	1990-1992
1435/Aircraft Support Equipment Shop Storage Facility			Diesel	Unknown	Base disposal contract	1992
			Motor gasoline	Unknown	Base disposal contract	1992

Table 1-3. Hazardous Waste Generating Activities
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Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
1435 Aircraft Support Equipment Storage Facility (Continued)			Paint waste	Unknown	Base disposal contract	1992
			PD-680	Unknown	Base disposal contract	1992
			Hydraulic fluid	Unknown	Base disposal contract	1992
			Antifreeze	Unknown	Base disposal contract	1992
			JP-4	Unknown	Base disposal contract	1992
			7808 synthetic oil	Unknown	Base disposal contract	1992
			Engine oil	Unknown	Base disposal contract	1992
1436/Hazardous Storage			Hydraulic fluid	Unknown	Base disposal contract	1991
			PD-680	Unknown	Base disposal contract	1991
			7808 synthetic oil	Unknown	Base disposal contract	1991
			Cutting fluid	Unknown	Base disposal contract	1991
			Naphtha	Unknown	Base disposal contract	1991
			Methyl ethyl ketone	Unknown	Base disposal contract	1991
			Lead-based paint	Unknown	Base disposal contract	1991
			Brake fluid	Unknown	Base disposal contract	1991
1602/Jet Engine Maintenance Shop			PD-680	Unknown	Base disposal contract	1990-1992
			JP-4	Unknown	Base disposal contract	1990, 1991
			Hydraulic fluid	Unknown	Base disposal contract	1990, 1991
			Oil	Unknown	Base disposal contract	1992
			Epoxy thinner	Unknown	Base disposal contract	1992
			Lacquer thinner	Unknown	Base disposal contract	1992
			Methyl ethyl ketone	Unknown	Base disposal contract	1992
			Epoxy stripper	Unknown	Base disposal contract	1992
1615/Specified Headquarters			Reverse bath	106.7 gallons/month	Base disposal contract	1990-1992
			Conditioner	106.7 gallons/month	Base disposal contract	1990-1992
			Fixer	106.7 gallons/month	Base disposal contract	1990-1992
			Bleach	106.7 gallons/month	Base disposal contract	1990-1992
			Stabilizer	106.7 gallons/month	Base disposal contract	1990-1992
			First developer	106.7 gallons/month	Base disposal contract	1990-1992
			Color developer	106.7 gallons/month	Base disposal contract	1990-1992

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Table 1-3. Hazardous Waste Generating Activities
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Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
1617/Training Aid Shop			Sodium persulfate etchant	4.6 gallons/month	Base disposal contract	1990-1992
			Solid paint waste, flammable	8.3 gallons/month	DRMO	1990-1992
			Combustible gas (aerosol)	2.1 gallons/month	DRMO	1990-1992
			DFD 12G developer	2.1 gallons/month	Base disposal contract	1990-1992
			Waste paint and thinners	12.5 gallons/month	Base disposal contract	1990-1992
1618/Hazardous Storage			Sodium persulfate	Unknown	Base disposal contract	1991
			Solid paint waste	Unknown	Base disposal contract	1991
			Combustible gas	Unknown	Base disposal contract	1991
			DFD 12G developer	Unknown	Base disposal contract	1991
1628/Aircraft Support Equipment Shop Storage Facility			Mean Green soap	55 gallons/month	Base disposal contract	1990-1992
			Battery acid	6 gallons/month	Base disposal contract	1990-1992
			Engine oil	55 gallons/month	Base disposal contract	1990-1992
			Methyl ethyl ketone	1 gallon/month	Base disposal contract	1990-1992
			PD-680	80 gallons/month	Base disposal contract	1990-1992
			Synthetic oil	41.7 gallons/month	Base disposal contract	1990-1992
			Antifreeze	5 gallons/month	Base disposal contract	1990-1992
			Hydraulic, transmission, and brake fluid	10 gallons/month	Base disposal contract	1990-1992
			Paint remover	9.2 gallons/month	Base disposal contract	1990-1992
			Paint and thinners	10 gallons/month	Base disposal contract	1990-1992
1643/Maintenance Dock			Paint remover	8.3 gallons/month	Base disposal contract	1990-1992
			PD-680	98.3 gallons/month	Base disposal contract	1990-1992
			Mean Green soap	1 gallon/month	Base disposal contract	1990-1992
			Carbon remover	0.7 gallon/month	Base disposal contract	1990-1992
			JP-4	50 gallons/month	Base disposal contract	1990-1992
			Hydraulic fluid	16 gallons/month	Base disposal contract	1990-1992
			7808 synthetic oil	Unknown	Base disposal contract	1991
			Nickel/cadmium batteries	Unknown	DRMO	1992
			Methyl ethyl ketone	Unknown	Base disposal contract	Unknown
			Poly thinner	Unknown	Base disposal contract	Unknown
3367/Hazardous Storage			Paint waste	Unknown	Base disposal contract	1991
			Phosphoric acid	Unknown	Base disposal contract	1991

Table 1-3. Hazardous Waste Generating Activities
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Facility (Building)/Use	Unit	Activity	Name of Waste Material	Generation Rate	Disposition	Years Generated
3369/Shop			Paint waste	Unknown	Base disposal contract	1990
			Phosphoric acid	Unknown	Base disposal contract	1990
4210/Assembly Shop			Alodine	Unknown	Base disposal contract	1990, 1992
			Methyl ethyl ketone	Unknown	Base disposal contract	1990, 1992
			Toluene	Unknown	Base disposal contract	1990, 1992
			Freon	Unknown	Base disposal contract	1990, 1992
			Hydraulic fluid	Unknown	Base disposal contract	1990, 1992
4213/Hazardous Storage			Alodine	Unknown	Base disposal contract	1991
			Methyl ethyl ketone	Unknown	Base disposal contract	1991
			Toluene	Unknown	Base disposal contract	1991
			Freon	Unknown	Base disposal contract	1991
			Hydraulic fluid	Unknown	Base disposal contract	1991
4214/Hazardous Storage			Paint waste	Unknown	Base disposal contract	1991
4215/Surveillance Inspection Shop			Paint waste	Unknown	Base disposal contract	1990
8503/Surveillance Inspection Shipping			Paint waste	Unknown	Base disposal contract	1990
8512/Hazardous Storage			Paint waste	Unknown	Base disposal contract	1991

- 1970-1975: During this period, most waste oils, spent solvents, and cleaners were disposed of by contractor removal. A private contractor would pump the materials from oil/water separators and from 55-gallon drums and bowsers. Recovered JP-4 was still stored at the fire department training area and burned in practice exercises. Recovered JP-4 was also reused. Some waste paints (contaminated with thinners and solvents), waste oils, and PD-680 are suspected of having been disposed of in the base landfills. Some waste oils, solvents, and cleaners were discharged into sanitary drains. This primarily occurred at the wash racks that discharge to the oil/water separator. This oil/water separator was routinely pumped out by a private contractor and the recovered materials removed from the base by the contractor.
- 1975-1982: The majority of waste oils, spent solvents, and cleaners were disposed of by service contract, either directly or through the Defense Reutilization and Marketing Office (DRMO). Recovered JP-4 was stored at the fire department training area and burned during practice exercises; recovered JP-4 was also reused. PD-680 used at the wash racks was discharged to the oil/water separator, which discharges to the sanitary sewers.
- 1982-Present: Waste oils, solvents, and cleaners are collected in 55-gallon drums and temporarily (less than 90 days) stored at 12 hazardous waste accumulation points located throughout the flightline area. They are subsequently disposed of by contractor removal through DRMO. Recovered JP-4 fuel was stored at the fire department training area for subsequent burning in practice exercises or reuse. Removal of waste oils and PD-680 (Type II) from oil/water separators is also handled by an off-base contractor through DRMO.

Table 1-4. Off-Base Properties

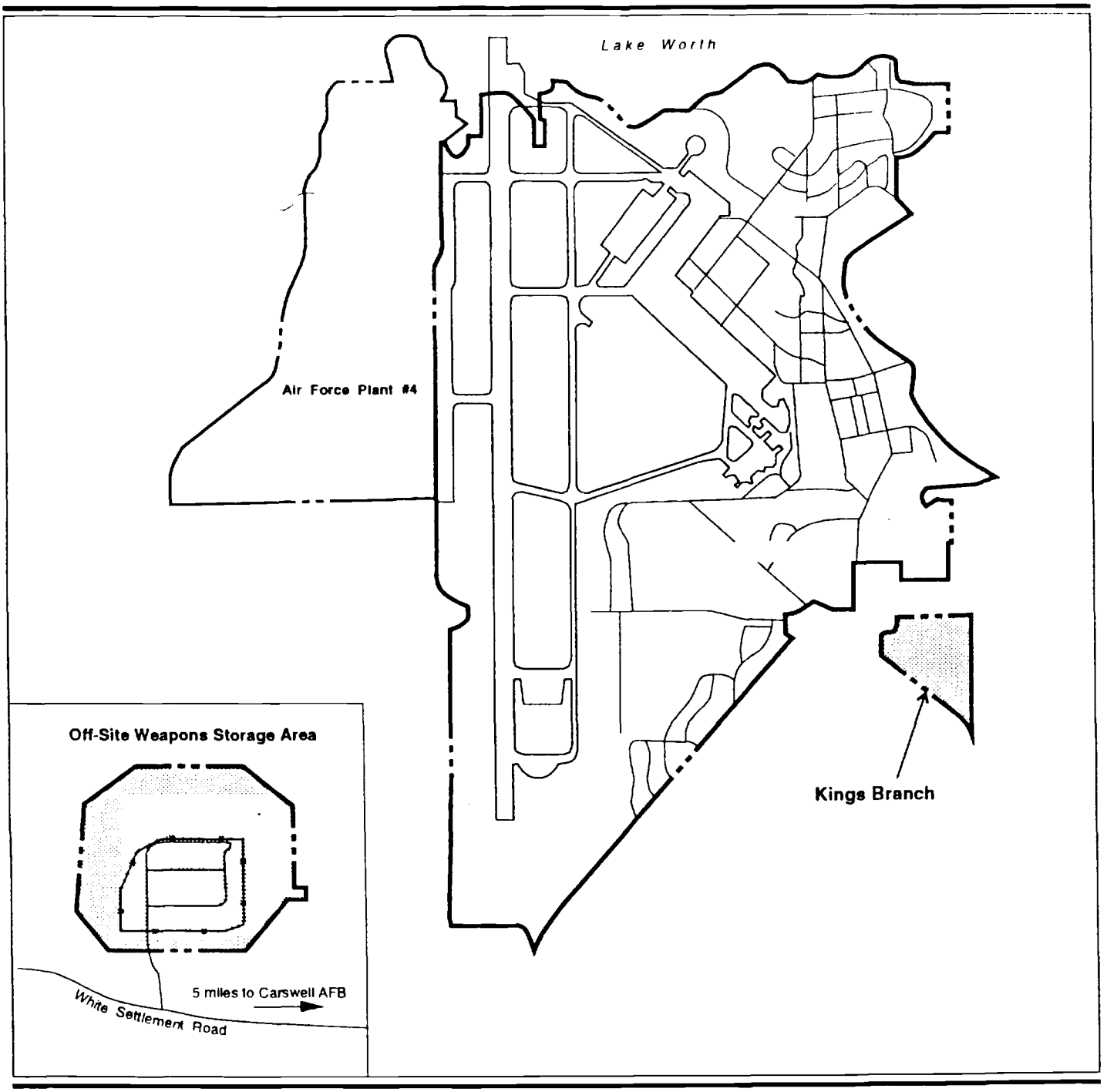
Description	Acreage	Date of Acquisition	Environmental Status	Location	Remarks
Off-Site WSA	247	1960	IRM	5 miles west of Carswell	FY 1994
Kings Branch residential area	47	1955	Lead Paint Survey	Southeast of the main base	FY 1994

1.5 Base Property/Tenants

Base Properties. Carswell AFB includes the main base, the Off-Site WSA, and a noncontigous parcel commonly known as the Kings Branch residential area.

The Off-Site WSA consists of 247 acres located approximately 5 miles west of the main base. This property was acquired in 1960. The Off-Site WSA contains 11 weapon storage igloos and is considered an industrial land use. This site is surrounded by a restrictive easement required for explosive safety quantity distances.

The Kings Branch residential area consists of 47 acres southeast of the main base acquired in 1955. The housing in this area has not been used for 6 years and is in varying stages of



EXPLANATION

Off-Base Parcels

Base Boundary

Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Off-Base Parcels

Figure 1-2

disrepair. Property acquisition records for base parcels are summarized in Table F-1; their locations are shown on Figure 1-2. The environmental status of the off-base property is summarized in Table 1-4.

Associate Units/Non-Air Force Tenants. Table 1-5 lists the significant Air Force and non-Air Force organizations on the base that were identified from base real property records. The Carswell AFB mission is to provide the required support for its tenants to maintain combat readiness. The following sections describe the major tenants and their missions:

Table 1-5. On-Base Tenant Units

Unit	Location
19 Air Division	Departed
7 Bombardment Wing	Departed
7 Combat Support Group	Departed
415 Field Training Detachment	Departed
2048 Communications Squadron	Departed
Detachment 22, 26 Weather Squadron	Departed
301 Tactical Fighter Wing (AFRES)	
U.S. Air Force Regional Hospital Carswell	Closed
AAFES	Open
BX-Mart	Open
Marine Air Group 41	Bldg 1050 and Bomber Row
Marine Air Traffic	
Navy	
Federal Bureau of Prisons	Hospital Area
White House Communications	

- 19 Air Division: Assigned units were capable of conducting strategic warfare, sustained and effective air refueling, missile warfare, and strategic reconnaissance.
- 7 Bombardment Wing: Developed and maintained a combat-ready force capable of conducting strategic warfare as directed by ACC.
- 7 Combat Support Group: Provided housekeeping and service functions vital to the operation of the installation. Served as monitor and community point of contact for all Air Installation Compatible Use Zone affairs.

- 415 Field Training Detachment: Provided job-oriented system, associate and air crew familiarization training on specific weapons systems, and associated aerospace ground equipment.
- 2048 Communications Squadron: Provided communications/electronics services required to support the missions of ACC at Carswell AFB, and to provide the operational management of the Automated Weather Network Management Center.
- Detachment 22, 26 Weather Squadron: Provided or arranged for aerospace environmental staff and operational support services required by the Air Force and other U.S. Government agencies and activities in the Carswell AFB area.
- 301 Tactical Fighter Wing (Air Force Reserve [AFRES]): Provided training for reservists to achieve the capability for worldwide deployment and to be prepared, upon mobilization, to deploy with sufficient personnel, aircraft, and equipment to execute directed tactical fighter missions designed to destroy enemy forces, supplies, equipment, communications systems, and installations with conventional weapons within the limits of weapons systems capabilities.
- U.S. Air Force Regional Hospital, Carswell: Provided medical services for all authorized personnel.
- Army and Air Force Exchange Service (AAFES) and Base Exchange.
- Air Force Commissary Service.

Table 1-6. Property Acquisition Summary				
		Acreage		
Tract No.	Previous Land Owner	Fee Land	Easement Land	Acquisition Date
1	CITY OF FORT WORTH, TEXAS	967.12		1941
A-3	CLYDE BURNS	0.34		1942
14	MORTON L. CROSBY, ET UX	4.68		1942
15	JACK KNIGHT, ET UX	4.76		1942
C-18	MRS J. P. BROWN	0.57		1942
C-21	BILLIE MAE PHILLIPS, ET VIR	0.92		1942
C-22	HENRY BARNETT, ET UX	0.72		1942
C-25	JACK L. HILL, ET UX	0.57		1942
C-28	F. F. SEBASTIAN, ET UX	0.11		1942
C-29	CLARENCE M. SEBASTIAN, ET UX	0.11		1942
C-35	GEORGE FRY, ET UX	0.45		1942
2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 23, B-3, C-15, C-16, C-17, C-19, C-20, C-23, C-24, C-26, C-27, C-30, C-32, C-33, C-34, C-36, C-37, D-54, D-60, D-66, D-73, D-93, D-96, E-102, E-104, E-106, E-108, E-111, E-130, E-139, E-150, E-151, E-154, E-164, E-166	WILLIAM A. BAILEY, ET AL	77.18		1942
E-167, E-169, E-192, F-172, F-175, F-178, F-180, F-182, F-184, F-185, F-189, F-194, F-201, F-203, F-215, F-216, F-217, F-222, F-225 & F-241	WILLIAM A. BAILEY, ET AL	14.21		1942
D-50	JACK KNIGHT, ET UX	12.17		1942
D-51	WALTER E. ECKERT, ET UX	0.20		1942
D-52	GEE F. MARTIN, ET UX	0.10		1942
D-53	EULA M. FULLER	0.21		1942
D-55	R. O. ISHAM, ET UX	0.75		1942
D-57	ROY SNELSON	0.13		1942
D-58	NORMAN D. CARDWELL, ET UX	0.14		1942
D-59	CLYDE HACK	0.19		1942
D-61	BOB Q. GUTHRIE, ET UX	0.28		1942

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
D-62	ROBERT R. WAND, ET UX	0.49		1942
D-63	F. M. STRIPLING, ET UX	0.55		1942
D-64	J. D. KOLDIN, ET UX	0.60		1942
D-65	JOHN CLYDE NOLEN, ET UX	0.60		1942
D-67	H. M. FELLER, ET AL	0.29		1942
D-68	M. L. PARTRIDGE, ET UX	0.54		1942
D-69	EDDIE FAY ELLIS, ET UX	0.36		1942
D-70	J. W. SIMMONS, ET UX	0.19		1942
D-71	LOYD HALL, ET UX	0.50		1942
D-72	J. H. STAMPS, ET UX	0.12		1942
D-74	JOSEPH E. NICKS	0.08		1942
D-75	ARON FOSTER, ET UX	0.39		1942
D-76	E. I. SCOTT, ET UX	0.39		1942
D-77	TOM QUINN, ET UX	0.20		1942
D-78	ST. ELMO BROCK, ET UX	0.10		1942
D-79	J. W. COPPS, ET UX	0.10		1942
D-80	C. T. GILLESPIE, ET UX	0.10		1942
D-81	R. P. HOLDEN, ET UX	0.20		1942
D-84	OTIS D. KELLEY, ET UX	0.10		1942
D-85	V. N. PARRIS, ET UX	0.39		1942
D-86	J. H. HURD, ET UX	0.23		1942
D-87	SCOTTIE H. SHIPE, ET UX	0.10		1942
D-88	WILLARD WILSON, ET UX	0.07		1942
D-89	CHARLES B. AUBREY, ET UX	0.46		1942
D-90	J. E. WILLIAMS, ET UX	0.32		1942
D-91, D-92	JETER LAYMANCE, ET UX	0.57		1942
D-94	JOHN E. DAVIS, ET UX	0.19		1942
D-95	WILLIAM F. THORNBURG, ET UX	0.19		1942
D-97	L. A. ADAMSON, ET UX	0.19		1942
D-98	F. M. NORMAN, JR., ET UX	0.19		1942
D-99	OSCAR L. BUTCHER, ET UX	0.59		1942
D-100	SAMUEL B. SNYDER, ET UX	0.61		1942
E-101	J. L. HOWINGTON, ET UX	0.66		1942
E-103	JULIA HENSLEY	0.32		1942
E-105	ELIZABETH CROCKER	0.19		1942
E-107	WILLIE T. SEATON, ET UX	0.96		1942
E-109	GERTA V. SMITH	1.27		1942
E-110	S. T. CASTLEBERRY, ET UX	1.27		1942
E-112	JAMES B. SAVAGE, ET UX	0.63		1942
E-113	LEONARD A. STOUT, ET UX	0.63		1942
E-114	G. A. WATERS, ET UX	0.63		1942
E-115	LESLIE W. SMITH, ET UX	0.32		1942
E-116	JOHN S. HAGER	0.32		1942
E-117	FAYTE E. BLOCKER, ET UX	0.63		1942

Table 1-6. Property Acquisition Summary				
		Acreage		
Tract No.	Previous Land Owner	Fee Land	Easement Land	Acquisition Date
E-118	W. F. SOUTH, ET UX	0.32		1942
E-119	ROBERT FLINCHUM, ET UX	0.32		1942
E-120	JOHN L. SAVAGE, ET UX	1.26		1942
E-121	F. M. GOODE, ET UX	0.59		1942
E-122	W. K. RAGSDALE, ET UX	0.59		1942
E-123	J. L. HAIGHT, JR, ET UX	0.59		1942
E-124	ROY W. LOBB, ET UX	0.59		1942
E-125	JOHN B. HETHERLY, ET UX	0.59		1942
E-126	MARY L. HETHERLY	0.59		1942
E-127	CARL A. WATERS, ET UX	0.59		1942
E-128	JOHN D. WILSON, ET UX	0.59		1942
E-129	DAN BEARDEN, ET UX	0.59		1942
E-131	ARTHUR LEE BELL, ET UX	0.59		1942
E-132	THOMAS R. CALLENDER	0.59		1942
E-133	C. V. GREEN, ET UX	0.29		1942
E-134	HENRY A. MORRIS, ET UX	0.29		1942
E-135	O. O. JONES, ET UX	0.59		1942
E-136	RUEL RAY REEVES, ET UX	0.29		1942
E-138	L. A. RUSSELL, ET UX	0.29		1942
E-140	DELBERT EUGENE MCDONALD,	0.59		1942
E-141	C. B. ARRINGTON, ET UX	0.59		1942
E-142	J. M. HARVEY, ET UX	0.74		1942
E-143	W. H. VALENTINE, ET UX	0.74		1942
E-144	SAMUEL B. SNYDER, ET UX	0.95		1942
E-145	T. B. HILL, ET UX	0.48		1942
E-146	MARY DICKEY ESTATE	0.24		1942
E-147	JAMES E. PYE, ET UX	0.24		1942
E-148	HOBART H. HARKINS, ET UX	0.24		1942
E-149	ETTA M. BROWN	0.24		1942
E-152	JAMES V. ARNOLD, ET UX	0.24		1942
E-153	S. H. SNYDER, ET UX	0.48		1942
E-155, F-188	WILLIAM C. STEVENSON, ET UX	0.56		1942
E-156	WILLIE H. FIELDER	0.24		1942
E-157	MARY FRANCES PHILLIPS, ET AL	0.24		1942
E-158	F. C. MINOR, ET UX	0.24		1942
E-159	ANNIE STURGES MACK, ET AL	0.24		1942
E-160	IVY E. DUNN, ET UX	0.24		1942
E-161	CHARLES A. GURLEY, ET UX	0.24		1942
E-162	EMMETT L. WILLIAMS, ET UX	0.24		1942
E-163	BERNARD SPRINGER, ET AL	0.51		1942
E-165	JOHN B. PRIDDY, ET AL,	0.37		1942
E-168	WM J. STAPP, JR., ET UX	1.84		1942
E-170	GEORGE D. HOWARD, ET UX	0.60		1942
F-171	MARVIN O. WRAY, ET UX	0.63		1942

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
F-173	JOHN A. MORSCHAUSER, ET UX	0.63		1942
F-174	WADE H. STAGGS, ET UX	0.31		1942
F-176	J. R. GRIFFIN, ET UX	0.31		1942
F-177	R. W. HAMILTON, ET AL	0.31		1942
F-179	PRESTON E. WILES	0.31		1942
F-181	B. W. CANNON	0.31		1942
F-183	E. M. BOWMAN, ET UX	0.33		1942
F-186	A. C. EASTERWOOD, ET UX	0.32		1942
F-187	HAROLD A. SOUCY	0.63		1942
F-190	ELISHA M. JONES	0.32		1942
F-191	SCOTT E. RUTHERFORD, ET UX	0.32		1942
F-193	DORA MAE HALL	0.32		1942
F-195	JAMES A. THOMAS, ET UX	0.30		1942
F-196	NELS NELSON, ET UX	0.63		1942
F-197	F. M. WILLETT, ET UX	0.32		1942
F-198	J. F. CRAWFORD , ET UX	0.32		1942
F-199	W. O. HARGROVE	0.32		1942
F-200	DANIEL D. WARREN, ET UX	0.32		1942
F-202	HERMAN T. HALLMARK, ET UX	0.32		1942
F-204	EDWARD R. SEELY, ET UX	0.59		1942
F-205	JASPER O. ATWOOD, ET UX	0.59		1942
F-206	WALLACE W. GILLESPIE, ET UX	0.29		1942
F-207	WAYNE C. REED, ET UX	0.88		1942
F-208	JACK O'DELL, ET UX	0.59		1942
F-209	JOHN PERRY PHELPS, ET UX	0.29		1942
F-210	ALLIE C. OTT, ET AL	0.29		1942
F-211	TRENT L. BEARDEN	0.59		1942
F-212	E. J. GERLICH	0.30		1942
F-213	PERCY J. THOMPSON, ET UX	0.29		1942
F-214	J. F. CRAWFORD, ET UX	0.59		1942
F-218	R. L. STEVENS, ET UX	0.88		1942
F-219	W. R. SLOCUM, ET UX	0.29		1942
F-220	PIERCE SLOCUM, ET UX	0.29		1942
F-221	J. H. ROBERTSON, ET UX	0.29		1942
F-223	CARL J. TRAVIS, ET UX	0.59		1942
F-224	E. L. SHACKELFORD, ET UX	0.29		1942
F-226, F-229	GUY T. MUIR, ET UX	0.58		1942
F-227	C. B. MALONE	0.59		1942
F-228	BEN HEAD, ET UX	0.59		1942
F-230	FLOYD SPEER, ET UX	0.29		1942
F-231	ROBERT HEAD, ET UX	0.58		1942
F-232	WM J. STAPP, JR, ET AL	3.11		1942
F-233	VERNON D. HALLUM, ET UX	2.50		1942
F-234	GROVER R. HUBER, ET UX	1.25		1942

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Date
		Fee Land	Easement Land	
F-235	G. C. WILLIAMS, ET UX	1.25		1942
F-236	LEONARD JACK, ET UX	0.63		1942
F-237	W. F. ADAMS, ET UX	0.63		1942
F-238	S. B. SUTTLE, ET UX	1.25		1942
F-239	FRED F. ADAMS, ET UX	0.63		1942
F-240	L. A. WRIGHT, ET UX	0.63		1942
F-242	WALTER S. SNOW, ET UX	2.50		1942
F-243	F. M. COLE, ET UX	1.25		1942
F-244	J. MORRIS, ET UX	1.25		1942
F-245	M. E. MORRIS, ET UX	2.50		1942
F-246	ERA ELLEN TRAVIS	2.14		1942
F-247	J. M. TRAVIS, ET UX	3.22		1942
F-137	V. T. KENNEMER	0.29		1942
G-249	ELIAS HILWIE, ET UX	7.91		1942
G-250	J. E. HELM, ET AL	5.88		1942
G-251	R. O. ALEXANDER, ET UX	2.97		1942
G-252	F. R. ALLEN, ET UX	3.04		1942
16	J. R. STAUDT, ET UX	2.20		1943
17	ST. ELMO BROCK, ET UX	1.83		1943
19	G. D. HOWARD, ET UX	5.87		1943
20	JOHN B. PRIDDY, ET UX	3.74		1943
21	C. R. NICHOLSON, ET UX	4.20		1943
22	IDA PENNINGTON`	3.05		1943
24	JACK M. BROWNE	2.00		1943
25	WILLIAM DWIGHT DOBSON, ET	0.29		1943
26	HAROLD V. JOHNSON, JR., ET	3.51		1943
27	CARL BRUNER, ET UX	0.31		1943
28	AMON G. CARTER	3.24		1943
29	AMON G. CARTER	0.77		1943
30	RAYMOND E. BUCK, ET UX	0.56		1943
31	J. F. COOK	3.38		1943
254, 255 & 267E	CITY OF FORT WORTH, TEXAS	3.60	8.63	1945
FH-1	LEO BREWSTER, ET UX	6.00		1947
FH-2	HARRY FIFER, ET AL	7.05		1947
FH-3	BARBARA KRUPKA	5.13		1947
FH-4	ROBERT E. LEE, ET UX	5.50		1947
FH-5	A. I. GOLDBERG, ET UX	5.46		1947
FH-6	W. T. SANSOM, ET UX	5.46		1947
FH-8	JESSIE ELLIOT HARWELL	38.83		1947
FH-9	MRS JOE FARMER BURGER, ET	11.00		1947
	TOTAL	1311.15	8.63	1942-1949
267E	JOHN GRAY, ET AL		0.22	1950

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
256, 256-1, 261E, 262E, 263E & A-185E	CITY OF FORT WORTH, TEXAS	34.12	32.97	1951, 1955 1958 & 195
257	W. F. CHARBONNEAU, ET UX	70.00		1951
A-100	WHITESETTLEMENT CEM.,	7.30		1952
A-101 & E-505	NOEL R. BAILEY, ET UX	14.85		1952 & 195
A-109	MRS MARY FAIN	19.30		1952
A-102	GATLIN MITCHELL, ET UX	22.90		1953
A-103	WILLARD M. WHITE, ET UX	5.00		1953
A-104	W COULSTING, ET UX	56.20		1953
A-105, A-107	E. W. JACKSON, ET UX	57.56		1953
A-106	J. A. JUNGE, JR., ET UX	1.94		1953
A-108, A-120	MARY FAIN	3.47		1953
A-114, A-115	BESSIE HERZ, ET VIR	9.46		1952, 195
A-110, A-137, A-178, E-503, E-518 & E- 540	TARRANT COUNTY, ET AL	25.66		1952, 1953, 1955 &1956
A-112	R. L. GARLOCK, SR., ET AL	96.70		1953
A-113, A-116, A-145, A-177, A-179, A-180, A-182, A-183	G. L. DEARING, ET UX	18.71		1953
A-117, A-119	ROY ALLEN, ET UX	1.57		1953
A-118	C. E. WATSON, ET UX	0.25		1953
A-121	LENARD PEMBERTON, ET UX	0.29		1953
A-124	ODIS DAVIS, ET UX	0.25		1953
A-125	S. H. CARLTON, ET UX	0.63		1953
A-127	DILLON D. HARDEE	0.50		1953
A-128	A. W. COSTEPHENS, ET UX	0.53		1953
A-129	EARL THOMAS, JR, ET UX	0.25		1953
A-130	JACK F. DOBBS, ET UX	0.50		1953
A-131	HAROLD L. BUSBY	0.25		1953
A-132	GLENDORA BRUMBAUGH, ET VIR	0.25		1953
A-133	PAUL STEVENS, ET UX	0.25		1953
A-134	DEWEY ROSE, ET UX	0.25		1953
A-135	GEORGE E. BRACKETT, JR., ET	0.50		1953
A-138 & A-159-1	F. L. CARMICHALL, ET UX	24.79		1953 & 195
A-139	JOHN HENRY COOK, ET AL	1.60		1953
A-140	HARRY B. KAHN, JR, ET UX	1.00		1953
A-141	MARVIN BROWDER, ET UX	2.04		1953
A-142	DONALD H. CHISM, ET UX	4.51		1953
A-143	WORTHAM R. BELL, ET UX	1.00		1953
A-144	CITY OF WHITE SETTLEMENT	0.20		1953
A-146	R. L. CARLOCK, SR., ET AL	0.19		1953

Table 1-6. Property Acquisition Summary				
		Acreage		
Tract No.	Previous Land Owner	Fee Land	Easement Land	Acquisition Date
A-147	JOHN E. DEARING	0.10		1953
A-148	E. D. DEARING, ET UX	0.58		1953
A-149	FRED E. KIRSCHNER, ET UX	0.29		1953
A-151	W. S. TURNER, ET UX	0.29		1953
A-152	R. G. COX, ET UX	0.29		1953
A-153	A. F. MORRIS, ET UX	0.29		1953
A-154	SMITH BUSBY, ET UX	0.29		1953
A-155	L. F. CADDELL, ET UX	0.58		1953
A-156	B. W. PEDERSON, ET UX	0.29		1953
A-157	LUM PHIFER, ET UX	0.29		1953
A-158	LEON C. HOBBS, ET UX	0.31		1953
A-159	R. L. CARMICHALL, ET UX	1.54		1953
A-160	D. R. JOHNSON, ET UX	0.03		1953
A-162	LESTER J. CORMIER, ET UX	0.73		1953
A-163	JUANELL DOWNE, ET AL	0.43		1953
A-164	ALVIN BREWER, ET UX	0.13		1953
A-165	J. C. HARRELL, ET UX	0.25		1953
A-168	J. A. HOLLEY, ET UX	0.50		1953
A-169	VIRGINIA KNIGHT, ET VIR	0.25		1953
A-170	WILLIAM LEO DURHAM, ET UX	0.50		1953
A-171	I. L. ROSE, ET UX	0.25		1953
A-172	J. F. PRATER, ET UX	0.25		1953
A-173	J. B. WILLIAMS, ET UX	0.25		1953
A-174	OLLIE P. BRIGHT, ET UX	0.50		1953
A-175	R. P. KUNKLE, ET UX	0.50		1953
A-176	W. A. GARDNER, ET UX	0.25		1953
A-181	R. L. CARLOCK, JR, ET UX	0.77		1953
A-126	A. H. CORDER	0.25		1954
A-136	LOUIS A. WEURDIG, ET UX	0.52		1954
A-150	W. E. GARRISON, ET UX	0.29		1954
A-161	JOHN C. G. HOLOWAY, ET UX	0.25		1954
B-257E	J.N. CASEY, ET UX		0.25	1954
B-213E	BILLY J. GRIFFITH, ET AL		0.23	1954
C-313E	J.H. COX, ET UX		0.25	1954
E-504	PATRICIA HOWARD HARRIS	10.00		1954
E-506	WILLIAM G. FULLER, ET UX	13.87		1954
E-507	BARBARA K. FULLER	5.00		1954
E-508	DR. ROBERT C. BOTTS, ET UX	6.18		1954
E-509	W.R. GRANDY, JR., ET AL	5.00		1954
E-511	NORRIS S. MEFFORD, ET UX	13.25		1954
E-512	ARNOLD C. WARD, ET UX	2.00		1954
E-513	WILLIAM W. BROWN, ET UX	1.75		1954
E-517	CHAUNCEY A. PRADE, JR. ET UX	5.10		1954
E-519	CHARLES F. CLAYTON, ET UX	12.11		1954

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
E-520	JOHN THOMAS FENNER, ET UX	1.00		1954
E-521 & E- 523	M.M. ROBERTSON, ET AL	6.20		1954
E-525	RAYMOND E. BUCH, ET UX	29.10		1954
E-526	WILLIAM DWIGHT DOBSON, ET	6.61		1954
E-529	HOMER PRIDDY, ET UX	3.47		1954
E-530	DATE M. HYDE	13.54		1954
E-531	SIDNEY T. OATES, ET UX	12.20		1954
E-533	LOIS TRIGG	3.22		1954
E-534	EVELYN OATES, ET VIR	1.67		1954
E-535	WAYNE O. RICHARDSON, ET UX	0.54		1954
E-536	GARLAND B. FRANKLIN, ET UX	0.61		1954
E-542, A-178-1, A-184 & A-194	STATE OF TEXAS, ET AL	5.23		1954 & 195
E-543, B-285 & B-209E	STATE OF TEXAS	1.98	101.00	1954, 1958 1959
E-544	H.R. HAMM, ET UX	0.19		1954
F-600	O.L. BUTCHER, ET VIR	0.42		1954
F-601	E.T.C. MILLER, ET UX	0.42		1954
F-602	AUDRY CARLISLE, ET AL	0.42		1954
F-603	MARIE GLASGOW, ET AL	0.42		1954
F-604	JESSIE S. McGEE, ET UX	0.42		1954
F-605	JAMES T. FINLEY, ET UX	0.42		1954
F-606	ALVIE J. STAFFORD, ET UX	0.42		1954
F-607	ELGIN K. MUELSCHEN, ET UX	0.42		1954
F-608	ELVAL MAE MITCHELL, ET AL	0.42		1954
F-609	JOHN K. PETTY, ET UX	0.84		1954
F-611	MATTIE BADGETT GLASGOW, ET	0.55		1954
F-612	MARTHA ANN BARRY	0.42		1954
F-613	M.A. WILSON, ET UX	0.84		1954
F-614	JIMMIE Z. MILLER, ET UX	0.42		1954
F-615	W.A. TURNER, ET UX	0.42		1954
F-616	W.P. BEARDEN, ET UX	0.26		1954
F-617	HAROLD V. GREEN, ET UX	0.16		1954
F-618	R.W. BUCHANAN, ET AL	0.21		1954
F-619	HUBERT WOLFORD, ET UX	0.63		1954
F-620	WILLIAM IRA BUSH, ET UX	0.21		1954
F-621	JAMES E. RICHARDS, ET UX	0.21		1954
F-623	RUBY LUCELLE BISHOP, ET VIR	0.42		1954
F-624	E.V. LAMEY, ET UX	1.12		1954
F-625	JESSE A. BUTCHER, ET UX	0.84		1954
F-626	GEORGE A. RUSHING, ET AL	0.25		1954
F-628	J.J. PRESCOTT, ET UX	0.23		1954
F-629	ROBERT M. ROONEY, ET UX	0.12		1954
F-630	WILLIAM EMBLETON, ET UX	0.14		1954

Table 1-6. Property Acquisition Summary				
		Acreage		
Tract No.	Previous Land Owner	Fee Land	Easement Land	Acquisition Date
F-631	R.W. BUCHANAN, ET UX	0.12		1954
F-632	L.V. GILES, ET UX	0.23		1954
F-633	CLIFFORD F. WEST, ET UX	0.14		1954
F-634	W.S. DRISKILL, ET UX	0.23		1954
F-635	G.T. GARRETT, ET UX	0.14		1954
F-636	CHARLES H. KERR, ET UX	0.23		1954
F-637	D.A. SNEDECKER, ET UX	0.14		1954
F-638	JOHN T. WEEK, ET AL	0.16		1954
F-639	DOROTHY McCASKILL	0.11		1954
F-640	A.J. MULLINS, ET UX	0.17		1954
F-641	L.L. LEDBETTER, ET UX	0.15		1954
F-642	J.C. SIMMS, ET UX	0.16		1954
F-643	BUDDY GERALD WHITE, ET UX	0.14		1954
F-644	CARL IMES, ET UX	0.19		1954
F-645	JOHN POPE JR., ET AL	0.13		1954
F-646	FLORENCE FRANKLIN, ET VIR	0.19		1954
F-647	H.G. BURGER, ET UX	0.37		1954
A	DEPARTMENT OF COMMERCE	1.67		1955
A-111, B-204E, B-289E & B-285E	TEXAS ELECTRIC SERVICE CO.	1.29	31.52	1955 & 1959
B-201E	JOHN H. COOK, ET UX		17.33	1955
B-214E	HILLCREST BAPTIST CHURCH		0.46	1955
B-215E	RUSSELL ODOM		0.24	1955
B-216E	GORDON B. JOHNSTON, ET UX		0.48	1955
B-217E	JESS L. BRAY, ET UX		0.37	1955
B-218E	CLYDE E. JONES, ET UX		0.37	1955
B-219E	ALVIN O. WOOD, ET UX		0.25	1955
B-220E	JAMES R. THURSTON, ET UX		0.25	1955
B-225E	A.B. COHRON, ET UX		0.19	1955
B-226E	JOE G. WILLIAMS, ET UX		0.37	1955
B-228E	D.L. PYBURN, ET UX		0.75	1955
B-230E	J. FOREST OLIVER, ET UX		0.24	1955
B-231E	A.B. COHRON		0.24	1955
B-232E	NELLIE MAY BURCHFIELD		0.48	1955
B-234E	VIRGIL S. HOLBROOK, ET UX		0.25	1955
B-235E	HENRY L. HOLBROOK		0.25	1955
B-236E	MRS. A.C. DUNN		0.25	1955
B-237E	C.E. CARLISLE, ET UX		0.25	1955
B-238E	G.H. CLANTON, ET UX		0.24	1955
B-239E	J.E. PARTEN, ET UX		0.50	1955
B-241E	E.H. BRAUCHT, ET UX		1.10	1955
B-242E	THOMAS O. DICKINSON, ET UX		0.90	1955
B-243E	JOHN H. UNDERWOOD		0.44	1955
B-244E	J.W. SHOEMAKER, ET UX		0.33	1955

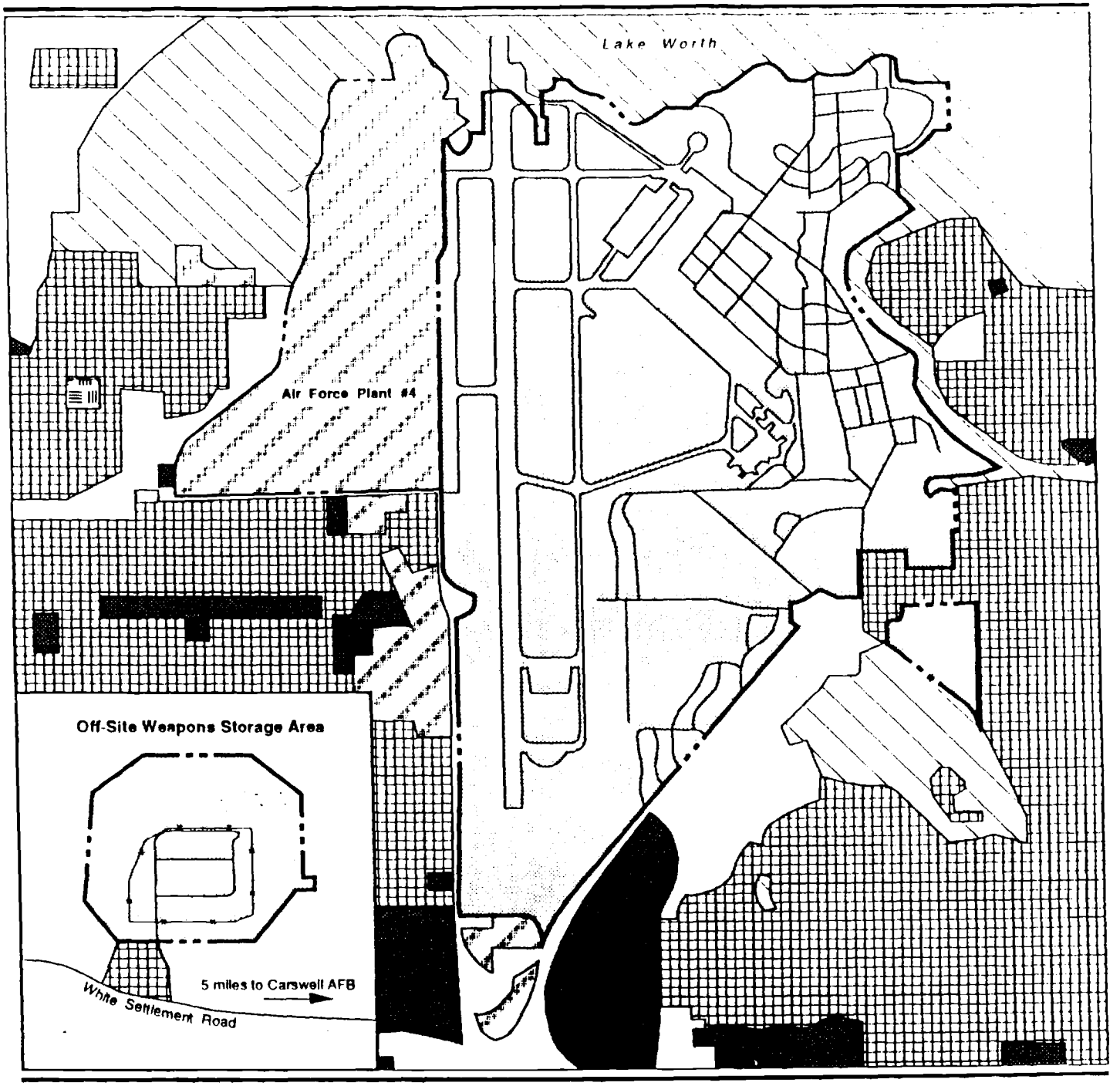
Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
B-245E & C-302E,	E.E. COLEMAN, ET UX		0.59	1955
B-246E	J.D. WATTS, ET UX		0.92	1955
B-247E	GEORGIANA GARRISON		0.36	1955
B-249E & B-260E	MAMIE O. SCOTT, ET VIR		0.61	1955
B-250E	W.E. BARTON, ET UX		1.07	1955
B-251E	M.E. WAGNER, ET UX		0.71	1955
B-252E	BERTHA SHARP, ET VIR		0.70	1955
B-253E	CHESTER H. SEGER, ET UX		0.35	1955
B-255E	E.C. JORDAN, ET UX		0.25	1955
B-256E	MARY E. STATUM		0.25	1955
B-258E	W.E.BARTON, ET UX		0.25	1955
B-259E	B. DORSETT, ET UX		0.50	1955
B-261E	ROBBIE LOUISE PADGETT, ET AL		0.75	1955
B-262E	J.J. BAKER, ET UX		0.50	1955
B-263E	HARRY McDOUGAL, ET UX		0.75	1955
B-264E	L.B. SMITH, ET UX		0.50	1955
B-265E	S.A. SPRAY, ET AL		0.25	1955
B-266E	MARY E. STATUM		0.25	1955
B-267E	JIMMIE HOGG, ET UX		0.25	1955
B-269E	L.R. TERRY, ET AL		0.50	1955
B-271E	F.A. BIRD, ET UX		0.50	1955
B-273E	B.E.GROSS, ET AL		0.25	1955
B-278E	CLIFFORD L. WILLIAMS, ET UX		0.50	1955
B-280E	L.H. WILLIAMS, ET UX		0.50	1955
B-281E	H.M. WILLIAMS, ET UX		0.25	1955
B-283E	R.D. VEATCH, ET UX		0.25	1955
B-293E	LASSITER LANE, ET UX		0.19	1955
C-303E	J.P. JENNINGS, ET UX		0.25	1955
C-306E	J.N. SWANCY, ET UX		0.25	1955
C-311E	S.J. TAYLOR		0.50	1955
C-312E	ROY GINN, ET UX		0.50	1955
C-314E	H.O. MIDDLETON, ET UX		0.25	1955
C-316E	MRS. ORA LEE SMOTHERS		0.25	1955
C-317E	J.E. SMOTHERS, JR., ET AL		0.50	1955
C-318E	JESS REYNOLDS, ET UX		0.25	1955
C-321E	STELLA JENNINGS JACQUE		0.24	1955
C-323E	DELTA R. PAUL		0.24	1955
C-324E	GUY E. JARVIS, ET UX		0.24	1955
C-325E	I.E. KENNELLY		0.24	1955
C-326E	O.B. AWTREY, ET UX		0.24	1955
C-328E, C-349E, D-440E, D-455E & D-400E	R.O. BERKE, ET AL		2.97	1955 & 19E
C-332E & D-410E	ALEXANDER KUZMICKEY, ET UX		1.09	1955

Table 1-6. Property Acquisition Summary				
		Acreage		
Tract No.	Previous Land Owner	Fee Land	Easement Land	Acquisition Date
C-334E	J.C. JACKSON, ET UX		0.76	1955
C-335E	G.J. BURK, ET UX		0.25	1955
C-337E	L.C. LEE, ET UX		0.25	1955
C-338E	K.H. WITHROW, ET UX		0.25	1955
C-340E	DOUGLAS E. HISSIGNS, ET UX		0.30	1955
C-341E, C-342E & D-403E	THE FAIR-WAY CO.		0.80	1955 & 1956
C-343E	W.T. REYNOLDS, JR. ET UX		0.25	1955
C-372E	ANN S. HILDEBRANDT, ET VIR		0.25	1955
E-501	W. COULSTING, ET UX	54.80		1955
E-502	RHEA J. VERNON, ET UX	10.00		1955
E-510	WILLARD M. WHITE, ET UX	3.00		1955
E-514	WILLIAM A. BRATTON, JR., ET	3.11		1955
E-515	ED McDANIEL, ET UX	2.27		1955
E-516	VICTOR H. McDANIEL, ET UX	1.54		1955
E-522	C.R. SANDIDGE	2.00		1955
E-524	J.B. HONTS, ET UX	0.53		1955
E-532	EUGENE SERGI, ET UX	0.31		1955
E-537	GRACE COZBY	22.75		1955
E-538	MATTIE BELLE McNAUGHTON	6.49		1955
F-627	RIVER OAKS WATER CO.	3.27		1955
G-700, G-700E1 & E2	FIRST NATIONAL BANK OF FORT WORTH, TRUSTEE	247.00	232.95	1955
G-701E	VANDERVOORT'S, INC.		29.00	1955
F-649E	AMON G. CARTER FOUNDATION		0.96	1956
A-167-1	MARTHA FRANCES COOK, ET AL	23.60		1958
B-292E	WILLIAM BRYCE, ESTATE	0.13		1958
B-200E, B-290E & B-291E	J.M. LEONARD, TRUSTEE		67.89	1958
E-545	WESTWORTH VILLAGE, TEXAS	0.31		1958
B-202E	TOM COOK, ET UX		6.25	1959
	TOTAL	1055.77	553.89	1950-1959
A-185E	CITY OF WHITE SETTLEMENT		0.92	1960
B-203E, B-285E, B-286E, B- 287E & B-288E	WILLIAM BRYCE, ESTATE		52.94	1960
B-206E	TARRANT COUNTY, ET AL		6.39	1960
E-546, E- 547 & E-548	RAYMOND E. BUCK, JR., TRUSTEE, ET AL	135.64		1960
F-622 & 264E	CITY OF FORT WORTH, TEXAS	4.58	6.21	1960 & 1961
A-184E	STATE OF TEXAS		5.17	1964
J	DEPARTMENT OF THE ARMY	5.38		1968

Table 1-6. Property Acquisition Summary

Tract No.	Previous Land Owner	Acreage		Acquisition Da
		Fee Land	Easement Land	
	TOTAL	145.60	71.63	1960-1969
550 & 551	CITY OF WESTWORTH VILLAGE	6.04		1971
552E	ESTEBAN CONTRERAS ET UX		0.09	1973
		6.04	0.09	1970-1979
195	MAYFLOWER OFFICE &	1.77		1983
194	STATE OF TEXAS	1.12		1984
555	FORT WORTH I.S.D., ET AL	9.00		1986
556	M BANK FORT WORTH, TRUSTEE,	3.17		1986
557	CITY OF WESTWORTH VILLAGE	0.96		1987
558E	MIRANDA LEONARD, ET AL		0.02	1989
	TOTAL	16.02	0.2	1980-1989
258	CITY OF FORT WORTH, TEXAS	66.90	Acres under lease	
	Total Of Acres Fee & Easement	2595.44	634.35	3229.79



EXPLANATION

- Industrial
- Institutional (Education)
- Commercial
- Residential
- Public/Recreation
- Vacant Land
- Base Property
- Base Boundary
- Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Existing Off-Base Land Use

Figure 1-3

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TAB

CHAPTER 2.0

Chapter 2
Property Disposal and Reuse Plan

2.1
Status of Disposal Planning Process

The DBCRA of 1990 authorized the closure of Carswell AFB with the retention of an area for continued Air Force operations. As a result, Carswell AFB officially closed on 30 September 1993. A portion of the base property has been retained by the Air Force and is unavailable for disposal. The retained area supports continued operations of the 301 Tactical FW; Air Force Plant 4 run-up stations and treatment, storage, and disposal (TSD) activities. The Environmental Impact Analysis Process (EIAP) for base disposal and reuse was initiated in fall 1991. A draft Disposal and Reuse Environmental Impact Statement (EIS) was released for public review in February 1993.

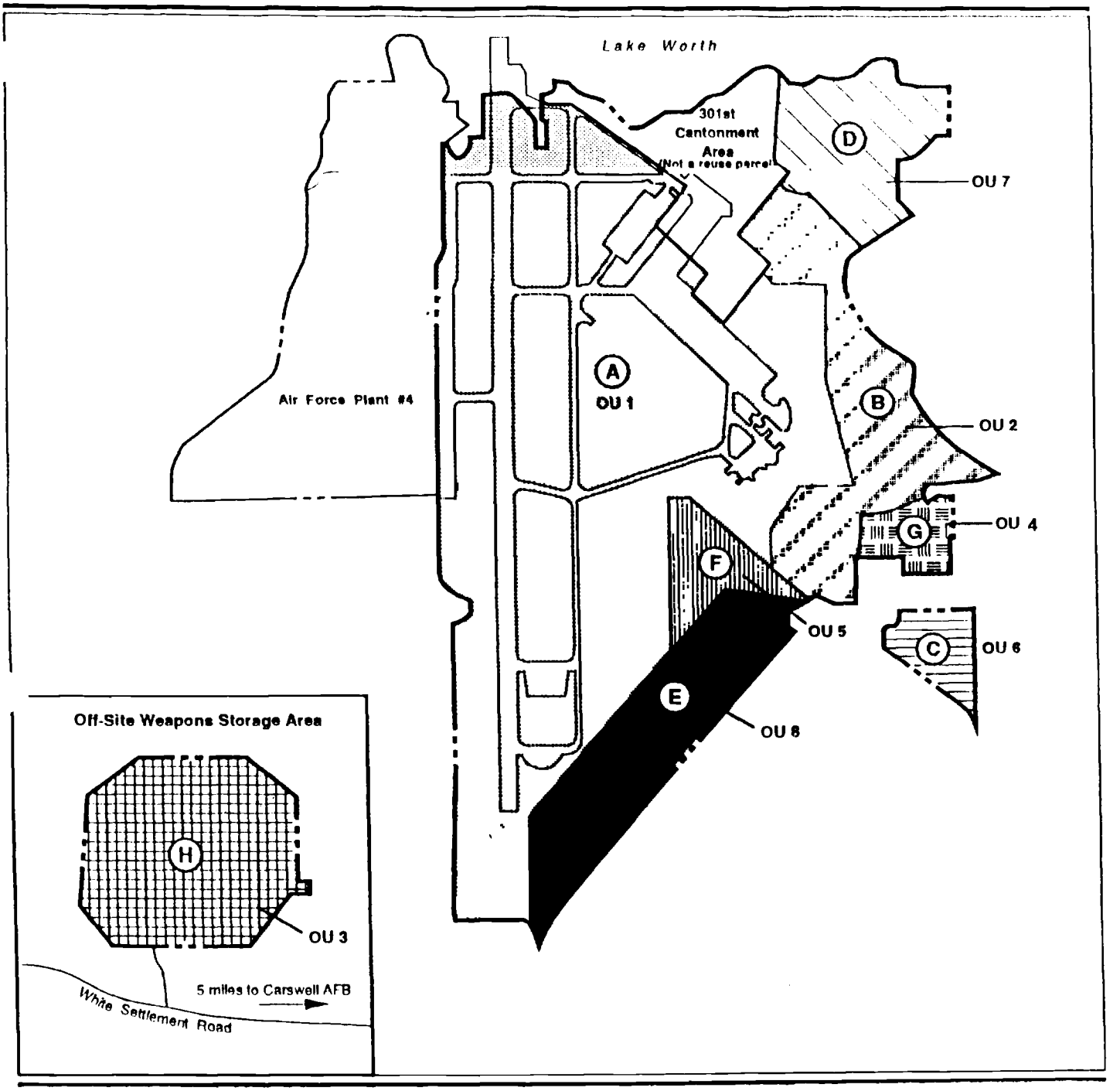
The DBCRA of 1993 was negotiated and the Act was signed on 30 September. DBCRA of 1993 recommendations will allow for the relocation of several Department of Defense (DOD) organizations to Carswell AFB. The draft EIS will be revised to include analysis of the bed-down and operations of NAS Fort Worth JRB. The draft EIS will be distributed in March 1994 for public review.

The partial Record of Decision (ROD), scheduled for publication in August 1995, will support the disposal decisions based on both 1990 and 1993 DBCRA decisions.

An additional disposal-related decision was made in April 1993, whereas the Secretary of the Air Force declared excess and surplus the off-base property known as Kings Branch to accelerate its disposal for civilian use.

The CRA, comprising Tarrant County and the cities of Fort Worth, White Settlement, and Westworth Village, was formed to coordinate the redevelopment efforts associated with the reuse of Carswell AFB. The CRA has incorporated the reuse plans of Federal Bureau of Prisons (FBOP) into their reuse proposal for the property available for disposal. Their plan also accounts for the additional property retained by DOD due to the 1993 DBCRA recommendations. The CRA comprehensive reuse plans focus on a naval air station, a federal medical center complex, and various industrial, commercial, residential, and recreational uses. The military land uses would include approximately 1,820 acres, the federal prison would consist of 99 acres, and the remaining civilian uses would total 640 acres.

To support the disposal process, disposal parcels will be defined based on the CRA reuse plans and the DBCRA decisions. These parcels will reflect general types of reuse, but may not necessarily reflect the land use zones identified in the Disposal and Reuse EIS (Figure 2-1).



EXPLANATION

- (A) Parcel Designation
- Base Boundary
- Air Force Plant #4 Boundary

Disposal and Reuse Parcels

0 650 1300 2600 Feet

Figure 2-1

Table 2-1. Reuse Parcel Data Summary

Parcel	Acres	Priority[a]	Description and Proposed Reuse	Known IRP Sites	Projected Transfer Date	Transfer Mechanism	Recipient
A	1,240	High	Airfield operations and support facilities; will be industrial/aviation	OT-18[b], DP-17, LF-06, LF-04, LF-05, FT-09, SD-10, ST-14, WP-07	October 1995	N/A	Navy
B	305	High	Base support operations; will be mixed use: commercial/ industrial	LF-01, ST-16, SD-13	October 1995	N/A	Navy
C	47	High	Housing; proposed reuse to remain residential	None	October 1995	N/A	Navy
D	150	High	Housing, medical; proposed reuse is commercial/ industrial/institutional	None	October 1995	N/A	Navy
E	230	High	Housing; reuse to be commercial	None	October 1995	N/A	Navy
F	145	Medium	Golf course; to remain golf course	(c)	October 1995	N/A	Navy
G	47	Low	Horse stables/outdoor recreation; proposed for outdoor recreation use	None	October 1995	N/A	Navy
H	247	High	Weapons storage; proposed reuse undecided	OT-15 (SWMUs 60 and 65)	October 1995	N/A	Navy

Notes: (a) This table reflects prioritization based on BRAC Round II requirements and is subject to change following BRAC Round III.
(b) This site may be impacted by the AF Plant 4 TCE plume.
(c) No known IRP sites.

Figure 2-1 and Table 2-1 indicate the types of reuse and the priority for disposal for each reuse parcel defined prior to the 1993 DBCRA recommendations. Disposal methods and associated schedules have not been established and are pending further disposal planning decisions.

The Draft Disposal Plan is undergoing revision by the General Services Administration and will reflect the 1993 DBCRA decisions. The schedule for completion has not been determined. When these disposal planning decisions are finalized, Figure 2-1 and Table 2-1 will be revised.

2.2
Relationship to Environmental Programs

The requirements for complying with CERCLA §120(h)(3)(B)(i) and the possibility of residual contamination are being factored into the property disposal and reuse process.

CERCLA §120(h)(3)(B)(i), as amended by CERFA, requires the identification of uncontaminated parcels with regulatory concurrence, and allows transfer by deed of remediated parcels at the point when the successful operation of an approved remedy has been demonstrated to the U.S. EPA. CERFA also provides that the identification of uncontaminated parcels shall consider petroleum products, as well as CERCLA-hazardous substances, and not be considered complete until concurrence by the state of Texas. This means that any required remedial and/or removal response actions must be selected and implemented for such contaminated properties before transfers to private parties can occur.

Because of the need to delineate between areas suitable for transfer and those that are not, the BCT is developing an environmental-condition-of-property map for the installation (see Section 3.4). This map will allow BCT members and other interested parties to visualize contaminated areas and Areas of No Suspected Contamination (ANSCs) and the relationship of these areas to disposal and reuse parcels. Several ANSCs have been identified to date that may be suitable for near-term property disposal to other parties. Contaminated areas and areas of suspected contamination are the subject of ongoing environmental response activities. The BCP strategy and schedule herein is designed to streamline necessary responses associated with these areas to expedite disposal and reuse decision making.

The Carswell AFB environmental restoration program strategies are being considered during the disposal and reuse decision to address the possibility of residual contamination and the need for easements, covenants, land use restrictions, and institutional controls. Areas on base where hazardous substances, pollutants, or contaminants are expected to remain above levels that allow for unlimited use and unrestricted exposure will constrain or delay future use of those areas. Table 2-1 presents a summary of the known IRP sites within each reuse parcel defined prior to the 1993 DBCRA recommendations. Development of the approximate timetable for disposal will require further decisions by the BCT and further remedial investigation (RIs).

2.3
Property Transfer Methods

2.3.1
Federal Transfer of Property

No property has been identified for transfer.

2.3.2
No-Cost Public Benefit Conveyance

No property has been identified for transfer.

2.3.3
Negotiated Sale

No property has been identified for transfer.

2.3.4
Widening of Public Highways

No property has been identified for transfer.

2.3.5
Donated Property

No property has been identified for transfer.

2.3.6
Interim Leases

One interim lease was signed and executed on 31 January 1994 for the golf course and there are two interim leases pending, one for office space and one for 20 homes. Table 2-2 presents existing legal agreements and interim leases.

Table 2-2. Existing Legal Agreements/Interim Leases

Title of Interim Lease/ Legal Agreement/ Proponent	Building No./ Areas	Date of Agreement	Reuse Parcel[0]	Type of Use	Status of Lease Agreement
Lease with CRA	Golf course	02/01/94	F	Recreation	Signed 31 January 1994
License with CRA	Building 260		G	Office space	Application pending
Lease with ARI	20 homes Kings Branch Area		C	House Handicap Individuals	Projected Date of Signature 30 Apr 94
Permit with the Federal Bureau of Prisons	Hospital Area		D	Federal Medical Center Complex with a Minimum Security Work Camp	Projected Date of Signature 30 Apr 94

2.3.7
Competitive Public Sale

No property has been identified for transfer.

2.3.8
Ingrants and Outgrants

At closure, airfield usage was reduced to continuing activities associated with the 301 Tactical FW, Air Force Plant 4, and other military transient operations. The retained area included reuse of the existing 301 Tactical FW facilities, as well as the existing firing ranges, WHCA facilities, noise suppression facility (Hush House), noncommissioned officers club, various supply/warehouse and fuel storage facilities, and engine run-up stations. The remaining base property was vacated and maintained in caretaker status. The land leases on the north side of the base were retained as ingrants for aviation safety and mission activities (Table 2-3). The restrictive easement associated with the Off-Site WSA was also retained for potential reuse. In addition, the Air Force held ingrants to use property outside the base boundaries for purposes other than avigation and safety easements. These primarily included lease of property adjacent to Lake Worth and right-of-way easements for utilities.

Table 2-3. Ingrants in Effect at Base Closure

Document Number	Expiration Date	Description/Location	Responsible Party
DACA 1443ENG7287	02/11/2013	Buried Cable	City of Fort Worth
DACA 635730020	06/30/1996	Use of land and facilities in case of war	Midwest Oklahoma Development Authority
DACA 635880313	06/30/2012	Control of lake front	City of Fort Worth
DACA 639700147	04/05/3000	Safety Zone	City of Fort Worth
DACA 639740077	Indefinite	Electrical Power Line	City of Westworth Village
DACA 639820045	Indefinite	Buried Cable	Texas State Highway Dept
DACA 639890247	02/11/13	Solid State Instrument Landing System & Ceilometer Facility and R-O-W	City of Fort Worth
DA44-4-43-ENG-7284	2/11/13	Submerged Cable	City of Fort Worth
DACA639850008	2/11/13	Submerged Cable	City of Fort Worth
220-W-100-85	Indefinite	Install Water Line	State Dept. of Hwys & Public Transportation
Info contained in Table 1-4	12/20/2005	Approach lights	City of Fort Worth
Info contained in Table 1-4	Indefinite	Avigation easement	City of Fort Worth and various property owners
Info contained in Table 1-4	Indefinite	On-base WSA safety easement	City of Fort Worth
Info contained in Table 1-4	Indefinite	Off-site WSA safety easement	Various Property Owners

The Air Force typically outgrants a number of leases, easements, and licenses to other agencies and organizations for use of the base property. At closure, the majority of these outgrants were for utilities (Table 2-4).

Table 2-4. Outgrants in Effect at Base Closure

Document Number	Expiration Date	Description/Location	Responsible Party
DA41443ENG5132	Perpetual	Telephone Lines	Southwestern Bell
DA41443ENG5135	Perpetual	Transmission Lines	Texas Electric CO.
DA41443ENG5134	Perpetual	Transmission	Texas Electric Co.
DA41443ENG5147	Perpetual	Water line	City of Fort Worth
DA41443ENG5494	Perpetual	Telephone line	Southwestern Bell
DA41443ENG5707	Perpetual	Gas line	Lone Star Gas Co.
DA41443ENG5849	Perpetual	Utility row	Texas Electric Co.
DA41443ENG6039	02/16/2011	Sewer line	City of Lake Worth
DA41443ENG6076	03/12/2060	Road	City of Fort Worth
DA41443ENG6153	11/20/2011	Electric lines (overhead)	Texas Electric Co.
DA41ENG5146	Perpetual	Water pipeline	City of Fort Worth
DACA 6317550192	01/31/1995	Telephone poles	Southwestern Bell
DACA 632680227	Perpetual	Sewer line	City of White Settlement
DACA 632690217	12/22/2068	Fence	TC Water Contracting
DACA 632720440	Perpetual	Sewer Line	City of White Settlement
DACA 632740034	7/26/23	Sewer Line	City of White Settlement
DACA 632840551	03/04/2009	Jet fuel pipe	Carswell Pipeline Co.
DACA 632850661	06/11/2015	Petroleum pipeline	Carswell Pipeline Co.
DACA 633810513	10/31/1995	Cattleguards	Private Individual
DACA 639890504	11/29/2088	Electrical line	City of Fort Worth
USAF CRS391001	01/01/2042	Electric service	Texas Electric Co.
DACA631790559	3/1/95	Credit Union	
DACA63-2-87-0502	2/16/61	Sewer line	
DACA633770504	Presently under renewal	Museum (Aerospace)	
DA-41-443ENG6037	2/16/11	Sewer Line	
DA-41-443ENG5495	Permanent	Telephone Line	Southwestern Bell
USAF-SAC-CRS-4-91-002	6/30/96	Sewer	City of White Settlement

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CHAPTER 3.0

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Chapter 3
Installation-Wide Environmental Program Status

This section provides a summary of the current status of environmental restoration projects and ongoing compliance activities at Carswell AFB. It also summarizes the status of community involvement to date and describes the environmental condition and suitability for transfer of the base property. Table 3-2 lists 19 IRP sites currently being investigated; it also lists the study area, parcel location designation for each site, and may be cross-referenced to the reuse map presented in Figure 2-1. A total of 80 former and/or current USTs and 75 aboveground storage tanks have also been identified by the base. Storage tanks are not listed on Tables 3-1 and 3-2 but are discussed in Section 3.2. The sites that are currently undergoing investigations (including USTs) are included in Figure 3-1. The following sections include a brief history of the IRP as it applies to the base, the current status of restoration projects, and the installation-wide source discovery and assessment status.

3.1
IRP Status

The ongoing IRP is under a DOD and state Defense-State Memorandum of Agreement (DSMOA), which is a financial reimbursement agreement between DOD and the state of Texas. There are no other agreements (i.e., Federal Facility Agreements [FFAs]) with federal or state agencies in effect to establish response mechanisms, schedules, and responsibilities. The base does have a Hazardous Waste Part B permit issued by the TNRCC in February 1991 that establishes requirements and procedures for investigating RCRA SWMUs. Most base IRP sites are also SWMUs and are regulated under this permit. A draft Partnering Agreement between AFBCA/OL-H and AF Plant 4 has been finalized. This agreement establishes the roles, responsibilities, and other procedures to be implemented during remediation of trichloroethylene (TCE)-contaminated groundwater for the AF Plant 4 IRP.

The base has been reevaluated under Hazardous Ranking System (HRS) II for possible listing on the National Priorities List (NPL). It has been determined that the base will not be included as an NPL site. The base has actively followed IRP and RCRA guidelines in the identification, assessment, and restoration of its hazardous waste-contaminated sites. An IRP program has been in place since 1984, and the base has worked closely with U.S. EPA Region VI and the TNRCC as lead regulatory agency on restoration of its IRP sites.

3.1.1
IRP Sites

Carswell AFB currently has 19 IRP sites. A Phase I - Records Search conducted in 1984 identified 15 sites requiring further evaluation. An additional four sites have been identified since then through subsequent IRP investigations and other base activities. The East Area Groundwater Site is suspected of being contaminated due to the presence of IRP sites, but is not currently considered its own site. Thirteen of these sites are also RCRA SWMUs. Table

3-2 provides a brief description of these sites and Figure 3-1 shows their geographic locations. (Table 3-1 contains a listing of Points of Interest [POIs] and their status.) Figure 3-1 also shows an extensive TCE-contaminated groundwater plume. This IRP site is the responsibility of the adjacent AF Plant 4 and is not a Carswell AFB IRP site. The TCE plume is managed under the FFA for AF Plant 4, which is an NPL site.

Table 3-1. Preliminary Location Summary

		PA/SI Report Results/Findings			
POI Number	**Description**	**PA**	**SI**	**Findings**	**Final Determination**
94-6501	Grounds Maintenance Yard	X	X	Heavy contamination from hydrocarbons	Additional investigation
95-8021	RV Parking Area	X		Potential contamination from hydrocarbons	Additional investigation
95-8020	Base Refueling Area	X		Evidence of contamination in groundwater	Additional investigation
95-8000	Southwest Aerospace Museum	X	X	High probability of contamination due to metals	Additional investigation
94-7106	Airfield Groundwater	X		Suspected hydrocarbon contamination	Additional investigation
95-8022	Golf Course Maintenance Area	X	X	Sampling confirms contamination	RA proposed

IRP sites are grouped into three OUs based on pre-1993 DBCRA-recommended reuse parcels. OU 1 (Parcel A) consists of nine sites in the flightline area; OU 2 (Parcel B) comprises four sites in the East Area Groundwater Site; OU 3 consists of a site in the Off-Site WSA, which is reuse Parcel H. The remaining six sites have not been assigned to an OU because they were closed prior to the use of OUs at Carswell AFB. Three of these six sites (LF-02, LF-03, and WP-11) are former SWMUs that were eliminated during the RCRA Facility Assessment (RFA). The other three sites, OT-15 (SWMU 65), FT-08, and OT-12 have NFAs approved by the TNRCC.

Sites LF-01 and DP-17 have been approved for NFA. Two sites in OU 1, FT-09 and SD-10, are in the RA phase for removal of contaminated soils. Sites LF-06 and OT-18 are currently in RI, Site ST-14 is in the remedial design (RD) phase, Site ST-16 is in the remedial investigation/ feasibility study (RI/FS) phase, and Site SD-13 is undergoing a Focused RI. Sites LF-04, LF-05, and WP-07 were in the RD phase, which was deferred in December 1991. OT-15 (SWMU 65) was discussed in the previous paragraph. Site OT-15 (SWMU 60) is currently being monitored and is programmed for an interim removal action this year. The status of the East Area Groundwater Site is listed as unknown because it will be evaluated through investigations of other sites. The East Area Groundwater Site is listed in Table 3-2 as an IRP site on the assumption that known IRP sites in the area have resulted in groundwater contamination.

Table 3-2. IRP Site Summary
Page 1 of 2

Project No.	Study Area OU	Site No.	WIMS-ES/Alias	Description	Material Disposed of	Date of Operation	Status	Risk to Human Health & the Environment *	Regulatory Mechanism	NFA	IRP Phase Completed
N/A	2	1	LF-01	Landfill 1	Unknown	1942-1989	NFA approval	None	RCRA/TNRCC	X	PA, SI
N/A	N/A	2	LF-02	Landfill 2	Construction rubble and materials	1952-1956	No action per RCRA/TNRCC Facility Assessment March 1989, PA, SI, 1988	None	RCRA/TNRCC	X	PA, SI
N/A	N/A	3	LF-03	Landfill 3	Construction rubble, fill area, and small amount of hazardous waste	1950-1952	No action per RCRA/TNRCC Facility Assessment March 1989, PA, SI 1988	None	RCRA/TNRCC	X	PA, SI
95-7104	1	4	LF-04	Landfill 4	Paint, thinners, strippers, cadmium batteries, waste solvents, burned wastes	1956-1973	RD delayed December 1991, PA, SI, RI/FS 1989	Medium	RCRA/TNRCC		PA, SI, RI, FS
95-7101	1	5	LF-05	Landfill 5	All types of flightline waste and refuse	1963-1975	RD delayed December 1991, PA, SI, RI, 1989	Medium	RCRA/TNRCC		PA, SI, RI, FS
93-7005	1	6	LF-06	Landfill 6	Construction rubble and possible drums of hydraulic fluid	1975-1978	RI/FS, 1994, PA, SI, 1989	Low	RCRA/TNRCC		PA, SI
95-7105	1	10	WP-07	Waste Burial Area	Buried drums containing cleaning solvents and leaded sludge from flightline	1960s	RD delayed December 1991 IRA Aug 1991, PA, SI, RI/FS - 1989	Medium	RCRA/TNRCC		PA, SI, RI, FS, IRA
N/A	N/A	11	FT-08	Fire Training Area 1	Waste oils and fuels were burned	Prior to 1963	NFA approved 17 December 1991, PA, SI, RI 1989	None	RCRA/TNRCC	X	PA, SI, RI, FS
90-5005	1	12	FT-09	Fire Training Area 2	Waste oils and solvents were burned; unused JP-4 was observed	1963-1989	RA, Risk Assessment FY 1994, PA, SI, RI/FS 1989	Low	RCRA/TNRCC		PA, SI, RI, FS, RA, ROD
95-7012	2	N/A	N/A	East Area Groundwater Site	Metals and hydrocarbons, possible solvents	1942?	Unknown, site characterization required	Medium	RCRA/TNRCC		PA, SI
90-5003	1	13	SD-10	Flightline drainage ditch	Petroleum, aircraft soap, and oils have migrated from flightline	Unknown construction date but used to present	RA, further site characterization required, PA, SI, RI/FS, RD 1989	Low	RCRA/TNRCC		PA, SI, RI, FS, RA, ROD

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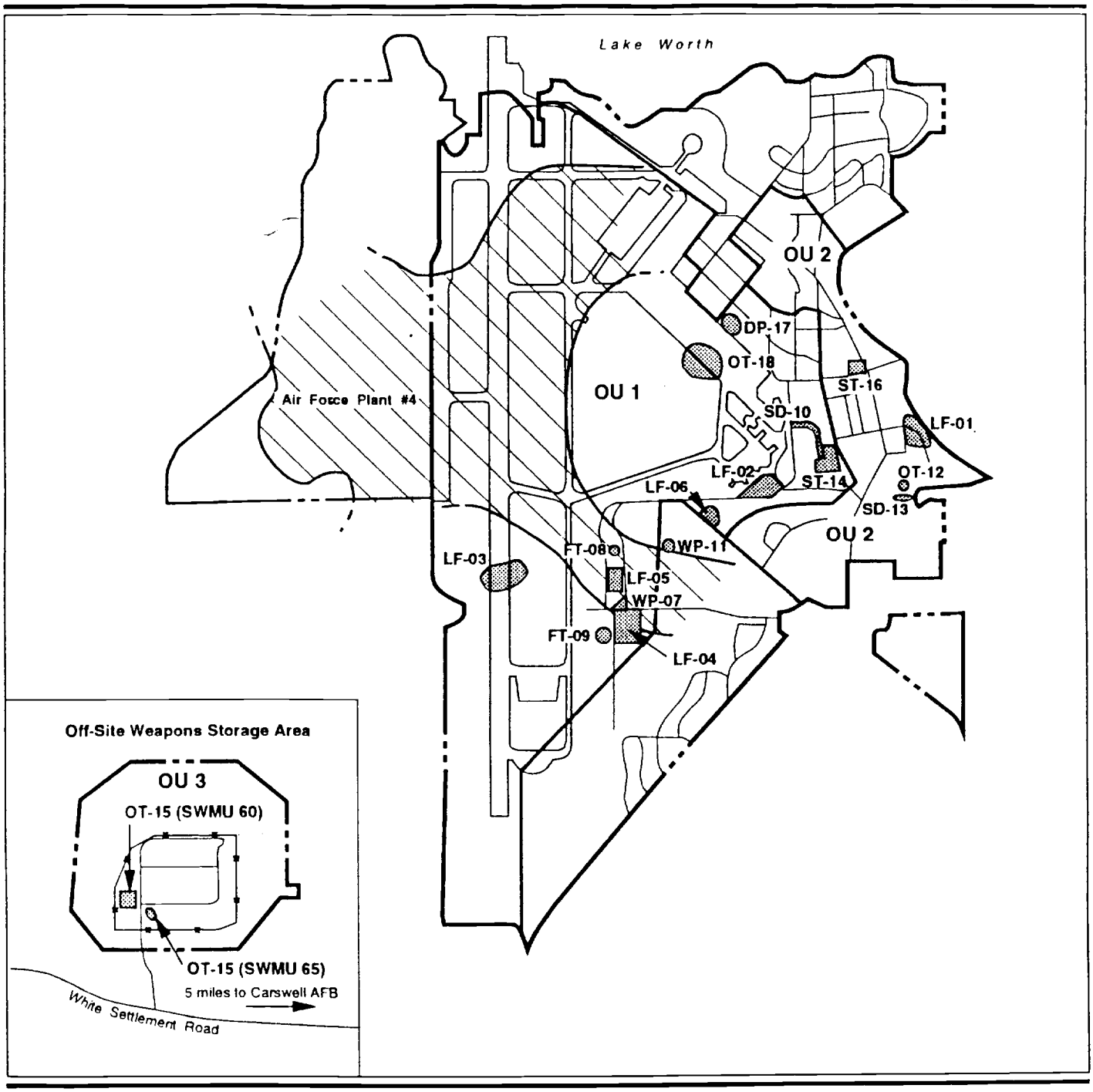
Table 3-2. IRP Site Summary
Page 2 of 2

Project No.	Study Area OU	Site No.	WIMS-ES/Alias	Description	Material Disposed of	Date of Operation	Status	Risk to Human Health & the Environment *	Regulatory Mechanism	NFA	IRP Phase Completed
N/A	N/A	14	WP-11	Pesticide rinse area	Rinse water from pesticide spray equipment	Unknown start-up date; no longer in use	No action per RCRA/TNRCC Facility Assessment - March 1989, PA, SI, RI 1989	None	RCRA/TNRCC	X	PA, SI, RI, P
N/A	N/A	15	OT-12	Entomology dry well	Pesticide and herbicide-contaminated rinse water	1965-1981	NFA approved 17 December 1991	None	RCRA/TNRCC	X	PA, SI, RI, FS
94-7016	2	16	SD-13	Unnamed stream	Hydrocarbons	1965-Present	Focused RI - 1994, PA, SI 1988	Low	RCRA/TNRCC		PA, SI, RI, FS
93-7009	1	17	ST-14	POL tank farm	JP-4	Early 1960s	RD/RA, Treatability Study 1994, PA, SI 1988	Low	RCRA/TNRCC		PA, SI, RI, FS
94-7007	3	NA	OT-15	WSA	Radium	1957-1969	Being monitored. Programmed for IRA FY 94, PA, SI, RI 1987	Low	RCRA/TNRCC		PA, SI, IRA, RI, FS
94-7206	2	NA	ST-16	Base service station	Hydrocarbons	Early 1970s	RI/FS 1994, PA, SI 1988	High	CERCLA/ Petroleum storage tanks/TNRCC		PA, SI, RI, FS
94-7106	1	NA	OT-18	Airfield groundwater	JP-4		RI/FS FY 94	Medium	CERCLA		PA, SI
N/A	1	NA	DP-17	Waste oil dump	Oils, solvents, unknown	Mid-70s	NFA approved	None	CERCLA	X	PA, SI
N/A	N/A	NA	OT-15	WSA disposal site	Waste cleaner, solvents, and thinners, TCE		NFA approved 17 June 1991, PA, SI, RI/FS 1987	Low	RCRA/TNRCC	X	PA, SI, RI/FS



EXPLANATION

IRP Site

Probable TCE Groundwater Contamination Plume - 5ppb level (Plume boundary not fully characterized)

Base Boundary

Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Site and OUs Currently Under Investigation

Figure 3-1

All 13 IRP sites that are also SWMUs are regulated under the state-issued RCRA permit. Sites ST-16, OT-18, and DP-17 are not SWMUs and are currently regulated under the Texas Solid Waste Disposal Act. Because Site ST-16 involves a leaking UST, it is also regulated under state petroleum storage tank (PST) regulations.

Table 3-3. Early Actions Status

IRP Site No.	Action	Purpose	Status
WP-07	Removed buried drums and contaminated soil	Remove contaminant source and associated soil contamination	Removal conducted between August and October 1991. Risk assessment pending
ST-14	Installed bioventing system	Remove source area of petroleum contamination	Ongoing
OT-15	Remove pipes containing low-level radioactive material	Remove source of contamination	To begin FY 1994
LF-04	Pilot plant installed	Data collection	In progress
LF-05	Pilot plant installed	Data collection	In progress

3.1.2 Installation-Wide Source Discovery and Assessment Status

An Environmental Baseline Survey (EBS) of Carswell AFB was completed in early January 1994. Through the EBS and other ongoing restoration and compliance activities, additional sites of potential contamination that require further assessment may be identified. At this time there are five sites being evaluated for possible inclusion in the base IRP. A grounds maintenance yard, Recreational Vehicle Parking Area, Base Refueling Site, Golf Course Maintenance Area, and former air museum site are undergoing preliminary assessments (PAs).

Remedial and Interim Action Projects. Interim actions to reduce or control known contamination have been conducted as emergency removals at two IRP sites. These actions are summarized in Table 3-3. Early actions are defined as those eliminating the source of contamination thereby expediting cleanup and property transfer.

Site WP-07 is a waste burial area that contained drums of cleaning solvents and leaded sludge. The drums and associated contaminated soil were removed in 1991; however, the site still requires a risk assessment. Final RD will be completed along with Sites LF-04 and LF-05 pending results of a pilot treatment system, which is currently in place.

Phase II IRP investigations at the petroleum, oil, and lubricants (POL) tank farm (Site ST-14) revealed the presence of free-product JP-4 on the surface of groundwater. A skimmer system was installed in a well in August 1992, but the skimmer system did not collect any free product and was removed in April 1993. This site is currently in the interim remedial action (IRA) phase using a bioventing system.

Table 3-4. Mission/Operational-Related Compliance Projects

Project	Status	Regulatory Program
There are no Mission/Operational-Related Compliance Projects for which AFBCA is responsible. All mission-related compliance projects are the responsibility of the 301 Tactical FW, which has a separate cantonment area. The following projects are the most recent FY 1994 requirements for 301 Tactical FW.		

Project #	Description
93-6104	Construct Dikes (1174)
93-4006	Facility Response Plan
94-6203	USTs Leak Testing
93-0028	Upgrade USTs
94-4001	Test AST Berms
92-0094	Construct ASTs
93-6208	Close Groundwater Monitoring Wells

Table 3-5. Closure-Related Compliance Projects

Project	Status	Regulatory Program
USTs	80 total	TNRCC
	8 scheduled for removal	
	7 removed in 1993	
	44 recommended for removal	
	20 remain open for use	
	5 temporarily closed	
	1 reuse status unknown	
Hydrant Refueling System	To be removed FY 1994	TNRCC
ASTs	75 total	TNRCC
	7 recommended for removal	
	3 remaining open for use	
	20 reuse status unknown	
Closure of RCRA Units	Closure of the following facilities:	Texas RCRA Program
	TSD	
	4 active accumulation points	
	12 inactive accumulation points	
Asbestos	Abatement of Child Development Center (Building 390) (Completed)	TSCA
PCB	Disposal of 8 transformers in storage area	TSCA
	Retrofilling 2 transformers	
	Replacement and disposal of 4 transformers	
	Replacement and disposal of 8 capacitors	
OWSs	Cleaning and inspection of 12 separators	TNRCC
	Removal of any separators found to have leaked during inspection	
Air	Removal of CFCs from air conditioners in buildings to be demolished	Office of the Air Quality TNRCC
SWMUs	5 active, non-IRP SWMUs with approved RAs	TNRCC

3.2
Compliance Program Status

Compliance activities for storage tanks and the closure of active and deactivated hazardous waste accumulation points and TSD facilities are conducted under the EC-CR Program. A Memorandum of Agreement (MOA) has been signed by Headquarters (HQ) AFBCA, AFBCA/OL-H, 7 BW/CC, 301 Tactical FW (AFRES), HQ AFRES/CE, and HQ ACC/CEV. This MOA delineates responsibilities of all parties involved in the transfer of Carswell AFB from ACC to AFBCA. Other compliance activities managed by the base address hazardous materials and waste management, asbestos, polychlorinated biphenyls (PCBs), water discharges, drinking water, radon, oil/water separators, and air emissions. The status of compliance projects at Carswell AFB is shown in Tables 3-4 and 3-5. Table 3-6 summarizes the status of compliance-related removal and interim actions.

Table 3-6. Compliance Early Action Status

Site No.	UST No.	Action	Purpose	Status
ST-16	1518-1	UST and piping removed, soil stockpiled	Eliminate source of contamination	Site undergoing further characterization
ST-16	1518-2	UST and piping removed, soil stockpiled	Eliminate source of contamination	Site undergoing further characterization
N/A	N/A	45 IRP drums removed	Storage time elapsed	Waste disposed of off-base
OT-15	N/A	Waste dump removed	Potential contaminant source	Sampling results negative, site clean
N/A	N/A	Asbestos removed, Child Development Center	Eliminate source of friable asbestos	Complete
N/A	N/A	11 O/Ws cleaned	To determine if contaminants exist	Complete

3.2.1
Storage Tanks

There are 80 USTs on base at the present time with four tank removal projects planned. A project to remove 53 USTs has been funded. Of the remaining USTs, 17 will remain open for use by the 301 Tactical FW, 5 tanks will be temporarily closed and turned over to the reuse authority, and 3 tanks will remain open and will be used by AFBCA. The status of the remaining tank is to be determined. The status of these USTs is provided in Table 3-7.

Aboveground Storage Tanks

There are 75 aboveground storage tanks on the installation. A listing of the tanks and known disposition is provided in Table 3-8.

Table 3-7. Underground Storage Tank Inventory
Page 1 of 3

Tank Number	Site No. Parcel	Facility	Year Installed	Capacity (Gallon)[a] Tank Material	Substance Stored	Status[b]	Comments	Future Actions
233-1	A	233	1954	Unknown	Propane	Active		
1015-1	A	1015	1967	3,000	JP-4	Active		
1027-1	A	1027	Unknown	Unknown	Unknown	Unknown		
1040-1	A	1040	1955	400	Diesel	Active		
1049-1	A	1049	1982	Unknown	Unknown	Removed		
1050-1	A	1050	1982	15,000	Heating Fuel	Active		
1064-1	A	1064	1988	10,000	Diesel	Active		
1064-2	A	1064	1988	10,000	MOGAS	Active		
1064-3	A	1064	1988	10,000	MOGAS	Active		
1064-4	A	1064	1988	10,000	Diesel	Active		
1140-1	A	1140	Unknown	800	Crankcase Oil	Removed		
1140-2	A	1140	Unknown	800	Crankcase Oil	Removed		
1145-1	A	1145	1985	1,000	Waste Oil	Removed		
1158-1	A	1158	1956	Unknown	Unknown	Unknown		
1163-1	A	1163	Unknown	Unknown	Unknown	Unknown		
1170-1	A	1170	1961	2,000	JP-4	Active		
1170-2	A	1170	1961	2,000	JP-4	Active		
1187-1	A	1187	1991	Unknown	Unknown	Unknown		
1191-1	A	1191	1983	500	Waste Oil	Active		
1194-1	A	1194	1983	2,000	Waste Oil	Active		
1212-1	A	1212	1985	Unknown	Unknown	Unknown		
1411-1	A	1411	1964	4,000	MOGAS	Removed		
1411-2	A	1411	1963	2,000	Diesel	Active		
1411-3	A	1411	1963	2,000	JP-4	Active		
1411-4	A	1411	1963	2,000	MOGAS	Active		
1420-1	A	1420	1985	2,000	Waste Oil	Active		
1420-2	A	1420	1983	4,000	Heating Fuel	Unknown		
1423-1	A	1423	1976	500	Waste Oil	Active		
1425-1	A	1425	1955	1,000	Diesel	Active		
1427-1	A	1427	Unknown	500	Diesel	Active		

Notes: (a) Numbers in parentheses refer to number of tanks, if more than one.
(b) Inactive status refers to temporarily out of service or permanently abandoned in place.
(c) Unable to locate.

Table 3-7. Underground Storage Tank Inventory
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Tank Number	Site No. Parcel	Facility	Year Installed	Capacity (Gallon)[a] Tank Material	Substance Stored	Status[b]	Comments	Future Actions
1518-1	A	1518	1972	10,000 (4)	MOGAS	Removed		
1518-2	A	1518	1970	600	Waste Oil	Inactive		
1627-1	A	1627[c]	Unknown	1,000	MOGAS	Removed		
1627-2	A	1627[c]	Unknown	1,000	Diesel	Removed		
1627-3	A	1627[c]	Unknown	2,000	JP-4	Removed		
1628-1	A	1628	1981	1,000	MOGAS	Removed		
1628-2	A	1628	1981	1,000	Diesel	Removed		
1628-3	A	1628	1981	2,000	JP-4	Removed		
1629-1	A	1629	1980	500	Diesel	Inactive		
1643-1	A	1643	1982	8,500	Heating Fuel	Active		
1643-2	A	1643	1980	5,000	Heating Fuel	Removed		
1658-1	A	1658	Unknown	275	Diesel	Removed		
1749-1	A	1749	1981	7,830	Diesel	Removed		
1750-1	A	1750	1957	20,000	Diesel	Unknown		
1750-2	A	1750	1986	20,000	Diesel	Inactive		
1750-3	A	1750	1986	8,000	Diesel	Active		
3000-1	A	3000	1985	15,000 (2)	Diesel	Active		
3001-1	A	3001	1959	20,000 (2)	Heating Fuel	Active		
3001-2	A	3001	1958	10,000	Diesel	Active		
3190-1	A	3190	1980	2,000	Heating Fuel	Active		
3359-1	A	3359	1979	2,000	Diesel	Active		
3360-1	A	3360	1978	5,000	Diesel	Active		
4101-1	A	4101	Unknown	500	Diesel	Removed		
4102-1	A	4102	1980	315	Diesel	Inactive		
4102-2	A	4102	1980	100	Heating Fuel	Active		
4111-1	A	4111	1979	500	Diesel	Active		
4115-1	A	4115	1968	600	Diesel	Removed		
4127-1	A	4127	1959	500	Diesel	Active		
4135-1	A	4135	1991	380	Diesel	Removed		
4130-1	A	4136	1991	300	Diesel	Active		

Notes: (a) Numbers in parentheses refer to number of tanks, if more than one.
(b) Inactive status refers to temporarily out of service or permanently abandoned in place.
(c) Unable to locate.

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Table 3-7. Underground Storage Tank Inventory
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Tank Number	Site No. Parcel	Facility	Year Installed	Capacity (Gallon)[a] Tank Material	Substance Stored	Status[b]	Comments	Future Actions
4141-1	A	4141	1959	250	Diesel	Active		
4143-1	A	4143	1964	500	Diesel	Active		
4145-1	A	4145	1981	500	Diesel	Active		
4150-1	A	4150	1951	25,000 (6)	Diesel	Inactive		
4152-1	A	4152	1951	25,000 (6)	JP-4	Inactive		
4153-1	A	4153	1953	25,000 (6)	JP-4	Inactive		
4154-1	A	4154	1951	25,000 (6)	JP-4	Inactive		
4155-1	A	4155	1955	1,000	Diesel	Active		
4170-1	A	4170	1952	25,000 (6)	JP-4	Removed		
4171-1	A	4171	1976	5,000	Diesel	Active		
4205-1	A	4205	1984	550	Waste Oil	Removed		
4210-1	A	4210	1985	1,000	Waste Oil	Inactive		
4210-2	A	4210	1985	8,000	Waste Oil	Inactive		
4210-3	A	4210	1985	6,000	Heating Fuel	Active		
4215-1	A	4215	1985	2,000	Heating Fuel	Active		
4216-1	A	4216	1983	5,000	Diesel	Active		
8505-1	A	8505	Unknown	Unknown	Unknown	Removed		
8514-1	A	8514	Unknown	Unknown	Unknown	Unknown		
8514-2	A	8514	1957	1,200	Diesel	Active		
8515-1	A	8515[c]	Unknown	1,000	Diesel	Removed		

Notes: (a) Numbers in parentheses refer to number of tanks, if more than one.
(b) Inactive status refers to temporarily out of service or permanently abandoned in place.
(c) Unable to locate.

Table 3-8. Aboveground Storage Tank Inventory
Page 1 of 2

Facility	Size[a]/Contents	Status
Boat House	500/Unknown	Removed
233	250/Butane	Active
234	500/MOGAS	Active
234	500/Diesel	Active
262	250/MOGAS	Active
262	250/Diesel	Active
262	250 (3)/Propane	Inactive
1000	275/Diesel	Inactive
1002	250 (4)/Diesel	Inactive
1015	5,000/Carbon dioxide	Inactive
1026	Unknown (3)/Liquid oxygen	Inactive
1026	Unknown (4)/Liquid nitrogen	Inactive
1027	5000/Detergent	Active
1027	8,000/Heating Fuel	Active
1050	55/Diesel	Inactive
1058	750 (2)/JP-4	Active
1062	25/Diesel	Active
1156	840,000/JP-4	Active
1157	840,000/JP-4	Active
1159	4,920,000/JP-4	Active
1161	2,000 (2)/AFFF	Inactive
1170	75/Diesel	Active
1187	Unknown/Unknown	Inactive
1194	275/Waste Oil	Active
1202	250/Propane	Active
1202	55 (4)/Various	Active
1212	55 (4)/Unknown	Active
1215	25/Diesel	Active
1256	5,000/MOGAS	Removed
1259	11,580/MOGAS	Removed
1261	11,580/MOGAS	Removed
1263	11,580/Diesel	Removed

Notes: (a) Numbers in parentheses refer to the number of tanks, if more than one.

Table 3-8. Aboveground Storage Tank Inventory
Page 2 of 2

Facility	Size[(a)]/Contents	Status
1264	11,580/MOGAS	Removed
1265	11,580/MOGAS	Removed
1320	55 (6)/Various Oils	Removed
1418	50/Diesel	Active
1423	100/Diesel	Active
1425	37/Diesel	Inactive
1425	100/Diesel	Active
1504	25/Diesel	Active
1510	275/Diesel	Active
1658	55/Diesel	Active
1720	300/Diesel	Active
1730	275/Diesel	Active
1750	110 (2)/Diesel	Inactive
1765	25/Diesel	Inactive
1807	Unknown/Chlorine	Inactive
3000	250 (2)/Diesel	Active
3106	Unknown/Chlorine	Inactive
4101	500/Diesel	Removed
4114	6 (2)/Diesel	Active
4120	6/Diesel	Active
4141	25 (2)/Diesel	Inactive
4146	2,500/JP-4	Active
4150	275/Diesel	Inactive
4152	275/Diesel	Inactive
4153	275/Diesel	Inactive
4154	275/Diesel	Inactive
4155	30/Diesel	Active
4155	275/Diesel	Inactive
4175	275/Diesel	Inactive
4205	5,000/CO_2	Inactive
8503	100 (2)/Propane	Inactive

Note: (a) Numbers in parentheses refer to the number of tanks, if more than one.
Source: Carswell AFB, n.d., UST/AST Inventory.

3.2.2
Hazardous Materials/Waste Management

Compliance activities conducted by the base include hazardous material/waste management in accordance with Texas RCRA requirements. At Carswell AFB, there are seven active hazardous waste accumulation points, four satellite hazardous waste accumulation points, one Texas Class I waste accumulation point, and one RCRA-permitted TSD facility. One satellite hazardous waste accumulation point and 12 hazardous waste accumulation points have been deactivated but not formally closed. A RCRA closure plan for the accumulation points is being prepared at this time.

3.2.3
Solid Waste Management

Carswell AFB currently has no active on-base landfills. Solid waste is hauled off base by a licensed contractor to the Lincrest Landfill. In the past, solid waste was disposed of at nine different locations on base. These sites are being investigated under the IRP.

3.2.4
Polychlorinated Biphenyls (PCBs)

The base survey has identified 89 PCB-containing transformers. Fifty-four transformers have been removed from service and disposed of through DRMO. Eight other transformers have been removed from service and are being stored in a vault for later disposal. Two transformers are scheduled for retrofilling and four replacement transformers have been ordered and will be installed when they arrive. In addition, the survey has identified one oil switch and eight capacitors that contain PCBs. The oil switch has been removed from service. Eight capacitors, currently in service, are located inside the airfield lighting vault and are to be removed in FY 1994.

3.2.5
Asbestos

A basewide asbestos survey was completed on 13 November 1992, and the Asbestos Management and Asbestos Operating Plans have been updated. The base plans to remove asbestos from the inactive Child Development Center.

3.2.6
Radon

A basewide radon survey was completed in January 1992. Of the 644 samples taken, 25 showed a concentration greater than or equal to the 95 percent confidence level for a 4.4 picocurie per liter (pCi/l) exposure. The 25 samples were taken in 21 base housing units, the Transient Living Facility, and one dormitory.

3.2.7
RCRA Facilities (SWMUs)

An RFA conducted in 1989 identified 68 SWMUs. The state-issued RCRA Part B permit lists 20 SWMUs that require RCRA Facilities Investigation (RFIs). All other SWMUs are currently considered closed by the TNRCC. Of the 20 active sites, 15 (SWMUs 18, 19, 20, 21, 22, 23, 24, 28, 53, 62, 63, 64, 65, 67, and 68) are also IRP sites and are discussed in Section 3.1.1. The remaining five sites, SWMUs 16, 32, 35, 36, and 61, have RFI Remediation Plans that have received notices to proceed from the TNRCC. SWMUs 16, 32, 36, and 61 are waste accumulation areas and are included in the discussion of waste accumulation areas under Hazardous Materials/Waste Management. SWMU 35 is an oil/water separator and is included in the discussion of oil/water separators.

3.2.8
NPDES Permits

A National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit is maintained by the base and requires weekly sampling of six locations and quarterly reporting. Wastewater is treated by the city of Fort Worth's Wastewater Treatment Facility. The base is included in a storm water management permit application prepared by the Air Force and submitted to U.S. EPA HQ. The OL is also responsible for monitoring stream emissions at nine locations along the Trinity River and Farmers Branch Creek. The OL is responsible for sampling and testing the drinking system to meet EPA and TNRCC requirements for safe drinking water.

3.2.9
Oil/Water Separators

Eleven oil/water separators on Carswell AFB were pumped and cleaned during spring 1993. In addition, a statement of work to inspect and test the separators is being prepared.

3.2.10
Air

Carswell AFB has no permits to operate. The base has contacted the Office of Air Quality, TNRCC to determine the feasibility of obtaining emission credits for equipment shut down because of the base closure. The statement of work for a contract to recover the air conditioner Freon from base housing units has been prepared. The contract should be released by April 1993.

3.3
Status of Natural and Cultural Resources

The Region of Influence (ROI) for biological resources includes all areas on the base (including the Off-Site WSA), and sensitive habitats located near the base and the off-base

easement areas surrounding the Off-Site WSA. These are the areas within which potential impacts could occur and that provide a basis for evaluating the level of impact to biological resources.

Information on the affected environment was obtained from a reconnaissance survey of the base in early June 1992, supplemented by a U.S. Fish and Wildlife Service (USFWS) threatened and endangered species input dated 1 April 1992, the Texas Parks and Wildlife Department Special Species and Other Significant Features input dated 8 May 1992, and additional concerns raised by the USFWS in a letter dated 6 August 1992. Aerial photographs taken in November 1990 and the 1986 Carswell AFB Base Comprehensive Plan were also used to assist in the biological analysis. An extensive literature search was conducted and field verified.

For this analysis, the ROI is synonymous with the Area of Potential Effect as defined by regulations implementing the National Historic Preservation Act (NHPA). The ROI for the analysis of cultural resources at Carswell AFB minimally includes all areas within the base boundaries (including the Off-Site WSA and the Kings Branch housing area), whether or not certain parcels would be subject to ground disturbance or other impacts.

The conveyance of federal property to a private party or nonfederal agency constitutes an undertaking, or a project that falls under the requirements of cultural resources legislative mandates. Any historic properties located on that property would then cease to be protected by federal law. However, impacts resulting from conveyance could be mitigated by placing preservation covenants on the lease or disposal document. Reuse activities within designated parcels would require the reuser to comply with the requirements contained in the preservation covenants.

Numerous laws and regulations require federal agencies to consider the effects of a proposed project on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the federal agency proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Office [SHPO] and the Advisory Council on Historic Preservation).

Only those potential historic properties determined to be significant under cultural resource legislation are subject to protection or consideration by a federal agency. The quality of significance, in terms of applicability to National Register of Historic Places (NRHP) criteria and of integrity, is determined in consultation with the SHPO; the process is discussed in Appendix E, Methods. Significant cultural resources, either prehistoric or historic in age, are referred to as "historic properties."

In compliance with the NHPA, the Air Force has initiated the Section 106 review process with the Texas SHPO (Texas Historical Commission). Record and literature searches were performed using documents from SHPO Carswell AFB in June 1992.

3.3.1
Threatened and Endangered Species (State and Federal)

The Air Force has conducted informal consultations with the USFWS and the Texas Department of Parks and Wildlife (TDPW) concerning threatened and endangered species potentially occurring in the vicinity of Carswell AFB. These two agencies identified 12 bird, 2 reptile, and 1 sensitive plant species potentially occurring in Tarrant County (Table 3-9, although no state- or federal-listed threatened or endangered species is known to permanently live on Carswell AFB.

The TDPW identified the auriculate false foxglove plant as historically being present in Tarrant County. However, no suitable habitat exists within the ROI for this plant and TDPW believes the plant may have been extirpated from the state. None of the federal-listed plant species for Texas are known to occur within 100 miles of Tarrant County.

Of the 12 listed bird species that may occur in Tarrant County, 10 are migrants attracted by Lake Worth. These migrants include the Arctic peregrine falcon (threatened), American peregrine falcon (endangered), bald eagle (endangered), piping plover (threatened), reddish egret (federal candidate, Category 2 and state-threatened), whooping crane (endangered), wood stork (state-threatened), brown pelican (endangered), white-faced ibis (federal candidate, Category 2 and state-threatened), and the interior least tern (endangered). None of these migrants are expected to reside in the vicinity of the main base or at the Off-Site WSA. Two other federal-endangered bird species require specific habitats that are not present within the ROI. The golden-cheeked warbler (endangered) needs old, mature juniper stands; the black-capped vireo (endangered) requires a specific habitat structure of wooded thickets and live oaks.

Two federal-listed candidate reptile species may occur in Tarrant County. One is the Texas horned lizard, which lives on grassy hillsides. The other is the Texas garter snake, which prefers prairie seeps and wet grassy swales. There is a slight potential that these reptile species could be present in the 4-acre, unmowed, horse pasture on the eastern side of the main base. The garter snake may also reside along the drainages on the main base, but prefers grassy areas to woody vegetation. Neither of the species were observed on the main base or at the Off-Site WSA. Suitable habitat has been fragmented on the base and much of it had been repeatedly mowed or heavily grazed; as a result, the grassland habitat on Carswell AFB is not expected to contain either of the Category 2 reptiles. These same reptile species are not expected to occur in the fenced WSA, but may be present in the pasture lands outside the fences.

Table 3-9 Threatened, Endangered, and State Ranked Species Potentially Occurring in the Vicinity of Carswell AFB

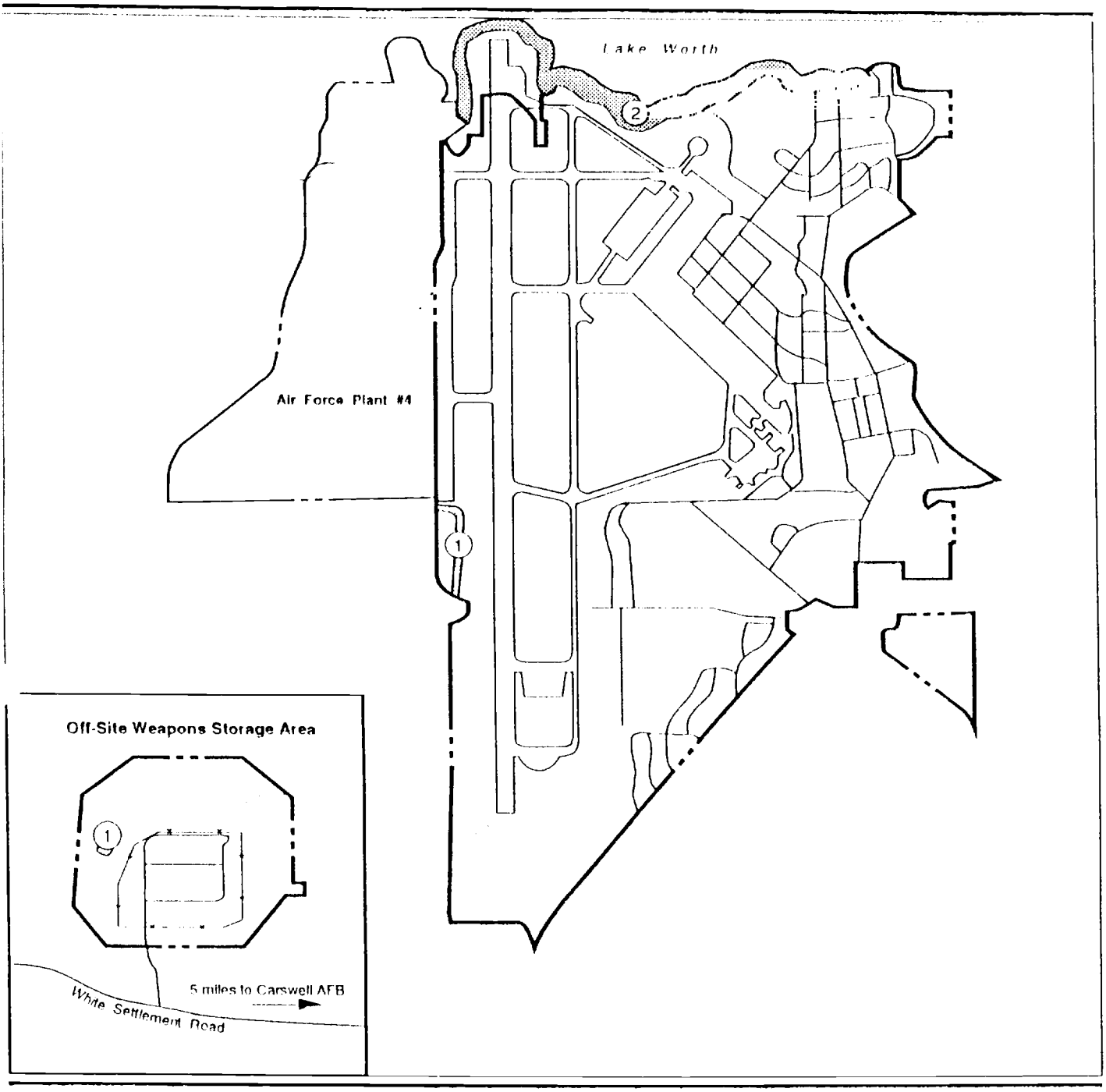
		Status	
Common Name	**Species Name**	**Federal**	**State**
Piping plover	*Charadrius melodus*	T	T
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E
Reddish egret	*Egretta rufescens*	C2	T
American peregrine falcon	*Falco peregrinus anatum*	E	E
Arctic peregrine falcon	*Falco peregrinus tundrius*	T	T
Whooping crane	*Grus americana*	E	E
Bald eagle	*Haliaeetus leucocephalus*	E	E
Wood stork	*Mycteria americana*	-	T
Brown pelican	*Pelecanus occidentalis*	E	E
White-faced ibis	*Plegadis chichi*	C2	T
Interior least tern	*Sterna antillarum*	E	E
Black-capped vireo	*Vireo atricapillus*	E	E
Texas horned lizard	*Phrynosoma cornutum*	C2	T
Texas garter snake	*Thamnophis sirtalis annectens*	C2	-
Auriculate false foxglove	*Agalinis auriculata*	C2	X*

Notes: E = Listed as endangered.
T = Listed as threatened.
C = Candidate, Category 2. Information indicates that proposing to list as endangered or threatened is possibly appropriate, but substantial data on biological vulnerability and threats are not currently known to support immediate preparation of rules. Further biological research and field study is necessary to ascertain status and/or taxonomic validity.
X = Apparently extirpated from state.
* Global rank: Globally imperiled, very rare, 6 to 20 occurrences (endangered throughout range).
Source: Texas Parks and Wildlife Department, 1992; U.S. Fish and Wildlife Service, 1991, 1992.

3.3.2 Sensitive Habitats

Sensitive habitats include those areas that can potentially restrict the reuse of the land, such as wetlands under the jurisdiction of the Clean Water Act (CWA) (discussed under Section 3.3.3, Wetlands), plant communities that are designated as unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, or crucial summer/winter habitat that are of agency concern). This includes areas associated with a protected species, or those areas critical for a life need of a species or population.

The shore of Lake Worth is considered sensitive habitat due to its importance to migratory birds, including state- and federal-listed species (Figure 3-a). The great blue heron rookeries by the Fort Worth Nature Center are sensitive nesting areas along the northern banks of Lake Worth. The birds are especially vulnerable to human intrusion during the nesting season. These rookeries are protected as sensitive wildlife areas by the TDPW.



Sensitive Habitats

Figure 3-a

3.3.3 Wetlands

Carswell AFB has a total of 0.6 acre of jurisdictional wetlands designated by COE (see Figure 3-a). Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Areas that are periodically wet, but do not meet all three criteria (hydrophytic vegetation, hydric soils, and wetland hydrology), may still be jurisdictional wetlands subject to Section 404 of the federal CWA if they qualify as problem wetlands.

Drainage ditches are not considered as "waters of the United States" and are not classified as "jurisdictional" for protection under Section 404 of the CWA by the Fort Worth COE.

Although water flows through Farmers Branch Creek and is found in various small ponds on the golf course, very little wetland vegetation is associated with these areas. Likewise, wetland vegetation along Lake Worth is infrequent and usually emergent when present. These areas do not support enough wetland cover to be classified as jurisdictional wetlands.

Jurisdictional wetland areas on base are found in the natural drainage stream southeast of AF Plant 4, totaling approximately 0.5 acre, and on the west side of the Off-Site WSA, totaling approximately 0.1 acre. The Off-Site WSA wetland is of low quality in value due to its lack of species diversity. The rest of the hydrophytic vegetation at the Off-Site WSA is located in man-made drainage ditches and, therefore, does not qualify as jurisdictional wetlands.

3.3.4 Surface Waters

Carswell AFB and all of Tarrant County are located within the Trinity River watershed. Surface water resources in the vicinity of the base include the West Fork, and Kings Branch of the Trinity River, Farmers Branch Creek, Lake Worth, two ponds located in the golf course area, and one small pond in the Off-Site WSA.

The amount of water the Trinity River receives is controlled by the watershed runoff from impervious areas during storms, by releases and overflows from the series of man-made reservoirs along the forks and tributaries by natural runoff, and by the discharge of effluent from sewage treatment plants. Lake Worth, a man-made reservoir on the West Fork of the Trinity River, is located north of Carswell AFB and is owned and operated by the city of Fort Worth. These waters are used for public water supply and recreation. Lake Worth covers an area of 3,558 acres and is 12 miles long. The lake has a conservation storage capacity of 38,130 acre-feet (or approximately 12.4 billion gallons).

Surface water is the main source of water in the vicinity of Carswell AFB. The City of Fort Worth Water Department is the primary supplier to the areas surrounding and including the

base. Water from the Farmers Branch Creek is used to irrigate the on-base golf course. White Settlement and Sansom Park obtain water from 12 and 9 groundwater wells, respectively, but when required, they purchase surface water from Fort Worth to supplement their water supplies. Carswell AFB purchased 0.93 million gallons per day (MGD), 0.77 MGD, and 0.76 MGD of water from Fort Worth in 1989, 1990, and 1991, respectively. The availability of surface water was adequate at the time of closure.

The potential for contamination of surface water is present at several locations on Carswell AFB. Potential for migration of hazardous contaminants through the surface water is considered high, primarily due to the proximity of identified sites to Farmers Branch Creek and Lake Worth. In addition, shallow groundwater carrying dissolved contaminants may discharge to these surface waters.

Surface drainage at Carswell AFB is collected by the storm drainage system and routed into the sewer system, or as outfall into Lake Worth. An underground drainage culvert conducts surface runoff generated from areas west of the base eastward to Farmers Branch Creek.

The Trinity River drainage area has been identified by the Governor of Texas as the Dallas/Fort Worth designated area for water quality management planning. This action was taken pursuant to Section 208 of the federal CWA. In addition, the North Central Texas Council of Governments (NCTCOG) was formally designated as the "208" area-wide water quality management planning agency. The NCTCOG is required to maintain a continuing area-wide planning process and to develop annual water quality management plans that are tailored to the water resource needs of the area. The TNRCC is the state-level agency charged with the protection of Texas waters.

The NCTCOG has implemented the Continuous Automated Monitoring (CAM) system. Two monitoring stations are located along the West Fork of the Trinity River, downstream from Carswell AFB. In 1992, results of analyses of water from the first CAM station downstream from the base showed that 100 percent of the samples were below the criteria value of 5.5 miligrams per liter (mg/l) for dissolved oxygen, and that measure of acidity and alkalinity (pH) values range from 6.6 to 9.8 due to the presence of substantial attached algal communities. The U.S. EPA secondary drinking water standard for pH is a range from 6.5 to 8.5 (which is a guideline, not a requirement).

The waters of Lake Worth are moderately hard, and contain slightly elevated salt levels during the warm summer season. Historically, Lake Worth has experienced problems with high sediment loads. Lake Worth was included in the 1990 Nonpoint Source Report for having known problems with sedimentation from agricultural and vacant lands (NCTCOG, 1992a). The sedimentation problems have been reduced by using Eagle Mountain Lake as a sediment trap.

Storm water runoff from the base that is not routed to the base or city sewer system is discharged into Lake Worth. The outfall is permitted under the NPDES and monitoring results document compliance with permit discharge limitations.

3.3.5 Floodplains

Portions of Carswell AFB lie within the 100-year floodplain; these areas occur along the peripheries of the West Fork of the Trinity River, Lake Worth, Farmers Branch Creek, the Off-Site WSA, and Kings Branch. Localized flooding occurs during heavy rainfall along the northern base perimeter and local depressions.

3.3.6 Paleontological Resources

During the Cretaceous period (65 to 145 million years ago), most of Texas was covered by an enlarged Gulf of Mexico. As a result, paleontological remains from this period are common to the Carswell AFB area. Literature searches and field reconnaissance in June 1992 confirmed the presence of fossils along the western boundary of the base and at the Off-Site WSA. Identified fossil types include cephalopods (ammonites), bivalves (*Cyprimeria, Gryphaea, Ostrea*), and worm tubes (*Serpula*). There are no listed or eligible National Natural Landmarks on the base.

3.3.7 Historic Structures

The historic period in Texas began in the sixteenth century with the arrival of the Spanish and the construction of numerous presidios and missions. Anglo-American settlement began in the nineteenth century as the Chisholm Trail opened west through Fort Worth, the last major stop before cattle herds were driven north to Kansas.

Early settlement in Tarrant County and the area that is now Carswell AFB, began with homesteading in the late 1850s by the Farmer, Thompson, and other families. Buck Oaks Farm, (Building 250), built by the Buck family in 1932, is located within the boundary of Carswell AFB and is currently the only NRHP-listed property on the base. Other residences and the Thompson family cemetery, which is on a parcel of privately owned land that pre-dates the establishment of the base, are also located within the Carswell AFB boundaries.

During the National Park Service (NPS) survey in 1990, four historic sites were identified (Table 3-b), all of which date from the Anglo-American period of settlement and none of which were considered eligible to the NRHP, with SHPO concurrence. The sites include:

- CAFB-01 - a dwelling foundation footing
- CAFB-02 - a bridge/water crossing
- CAFB-04 - a trash dump/scatter
- CAFB-05 - a trash dump.

First called the Tarrant Field Airdrome, Carswell AFB was authorized in early 1942, as a result of World War II; construction was completed by December of that year and the base was placed under the jurisdiction of the Gulf Coast Army Air Field Training Command. Numerous temporary wood-frame, mobilization-type facilities were built throughout the base during the World War II period, some of which are still utilized. Facilities constructed at the Off-Site WSA were built in 1956 and the Kings Branch area of Wherry-style housing was constructed in 1951.

Texas Tech University conducted an Historic Buildings Survey of Carswell AFB between September 1991 and May 1992; 31 buildings, 1 structure (a concrete water tower), and the Thompson family cemetery were evaluated and photographed during the survey. Of these 33 properties, the survey concluded that 4 could be eligible to the NRHP. The four properties include:

- Building 218 - Golf Clubhouse
- Building 233 - Golf Course Maintenance Shop
- Building 260 - Hyde House
- Structure 1809 - Concrete Water Tower.

Subsequent to the Texas Tech survey, changes in Air Force policy regarding the eligibility of some World War II and Cold War facilities have necessitated a reevaluation of Carswell AFB buildings and structures. A revision of the initial survey report is currently in progress, and a final determination on NRHP-eligible properties will be coordinated with the Texas SHPO and incorporated into the text of the Final EIS (FEIS).

Table 3-10 Historical and Cultural Resource Sites

Site Number	Description
Prehistoric Site:	
41TR125 (CAFB-03)	One non-diagnostic, isolated, secondary chert flake
Historic Sites:	
CAFB-01	A granite-and-mortar residential dwelling foundation footing, approximately 0.60 meter x 0.60 meter, which extends approximately 0.60 meter below the ground surface
CAFB-02	A partially destroyed bridge or water crossing constructed of concrete, approximately 6 meters x 3 meters
CAFB-04	A light scatter of historic debris, which includes nails, melted glass, metal plate fragments, drain fragments, and plumbing fixtures
CAFB-05	A trash dump containing cement slabs, bricks, brass fitting, and melted bottle glass fragments .

3.3.8 Prehistoric Sites

The physiography and climate of north-central Texas have supported a cultural resources chronology that extends into the past for nearly 12,000 years. Some of the earliest known

archaeological sites in North America have been discovered in this region, including a 9,000-year-old burial site near Leander and the Lewisville Site located along the Trinity River (Texas Historical Commission, 1985). The three major divisions of prehistory represented in this region are: the Paleo-Indian Period (10,000-6000 B.C.), the Archaic Period (6000 B.C. - A.D. 500), and the Late Prehistoric Period (A.D. 500 - A.D. 1500).

In April 1990, the Texas SHPO toured Carswell AFB to assess the status of cultural resources. Observations confirmed that many areas of the base have been heavily altered by previous construction activities and that many archaeological sites in those areas have been destroyed. The SHPO recommended, however, that three potentially sensitive areas of the base be surveyed.

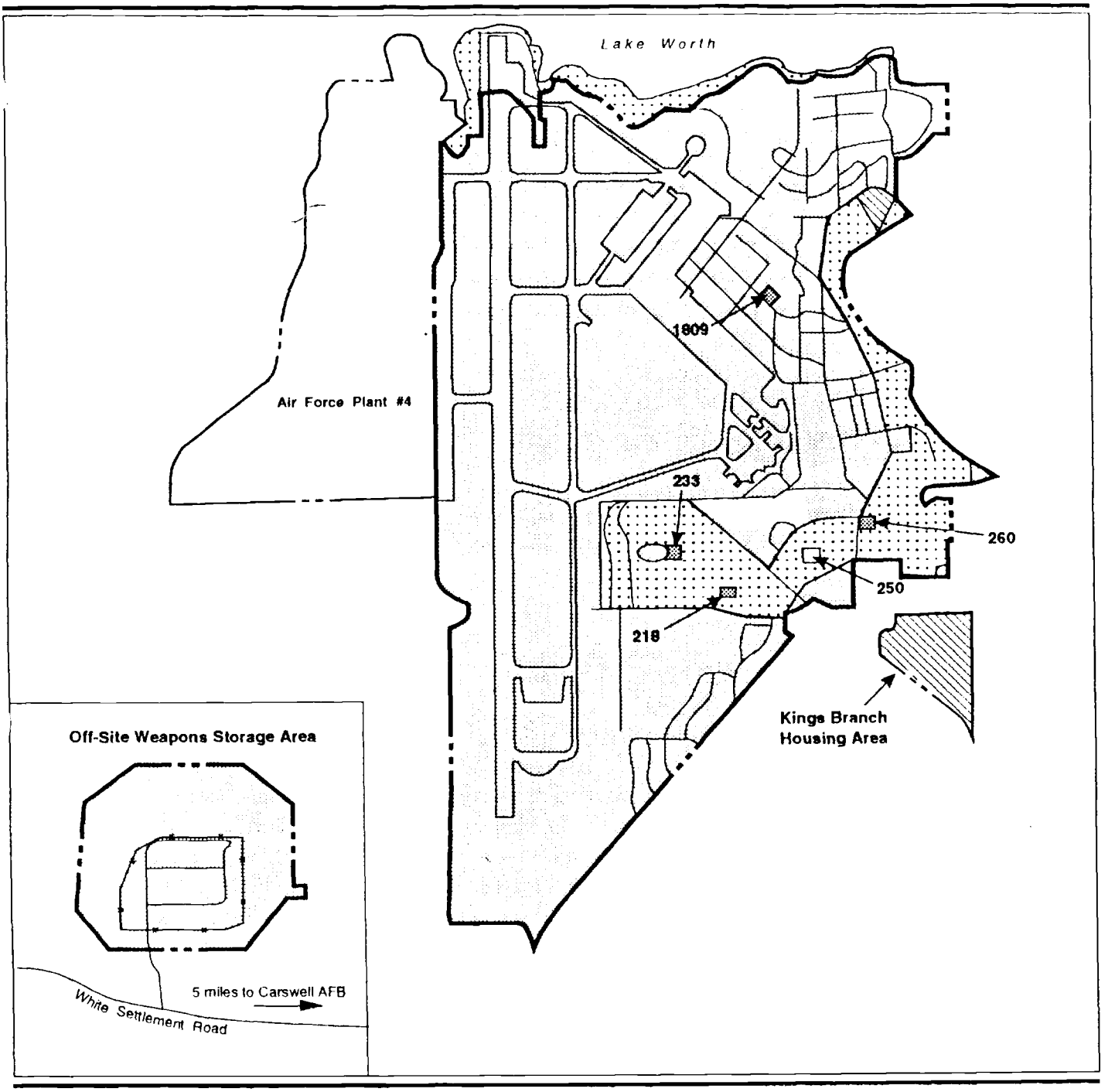
In November 1990, the NPS, Rocky Mountain Region, intensively surveyed approximately 320 acres that incorporated these sensitive areas (Figure 3-b Five sites were identified; only one site was prehistoric (Site 41TR125 [CAFB-03]) (see Table 3-10) Neither the prehistoric nor the four historic sites were considered eligible to the NRHP. The SHPO concurred with the findings on the five sites, and concluded that no further archaeological investigations would be required for Carswell AFB. The only other cultural resources survey of the base was of the Kings Branch housing area (36 acres) and a 9-acre tract adjacent to the Noncommissioned Officers' club in the northeast corner of the base; no cultural resources were identified during this survey (see Figure 3-b).

3.3.9
Traditional Resources

In historic times, the area of Carswell AFB was inhabited by the Comanche, the Kiowa-Apache, the Tonkawa, and the Caddo Indian tribes. Currently, the majority of Native Americans that live in the state of Texas are nonnative, with most descendants of the native tribes residing in Oklahoma and Kansas.

3.4
Environmental Condition of Property

To date, IRP investigations on the environmental integrity of soils and groundwater at Carswell AFB have revealed isolated occurrences of contamination by fuels and other chemicals beyond the TCE plume encroaching from AF Plant 4. As a result, feasibility studies (FSs) and RAs are in place or are being planned to remediate areas of known contamination. In addition, Carswell AFB released a final EBS early last calendar year. An internal working draft of the EBS was released for Air Force review in September 1993. An environmental-condition-of-property map (Figure 3-2) has been developed that incorporates information from these environmental site characterizations. Figure 3-2 indicates the current status of the environmental condition of the reuse parcels at Carswell AFB. The environmental condition of property is described under three major headings: areas of known contamination, ANSCs, and unevaluated areas. The EBS describes the environmental condition of base property in the following seven areas:



EXPLANATION

- Base Boundary
- Air Force Plant #4 Boundary
- Leased Property

- Cultural Resources Survey (U.S. Air Force, 1988)
- Cultural Resources Survey (NPS, 1990)
- Properties that may be eligible to the NRHP (Buildings 218, 233, 260, and structure 1809)*
- Buck Oaks Farm - NRHP Listed (Building 250)
- Area reviewed by SHPO and determined to require no Cultural Resources Survey

*Study in Progress

Cultural Resources

Figure 3-b

- Category 1 - Areas where no storage for 1 year or more, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
- Category 2 - Areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred).
- Category 3 - Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or RA.
- Category 4 - Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all RAs necessary to protect human health and the environment have been taken.
- Category 5 - Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or RAs are under way, but all required RAs have not yet been taken.
- Category 6 - Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented.
- Category 7 - Areas that are unevaluated or require additional evaluation.

3.4.1 Areas Where No Storage, Release, or Disposal Has Occurred

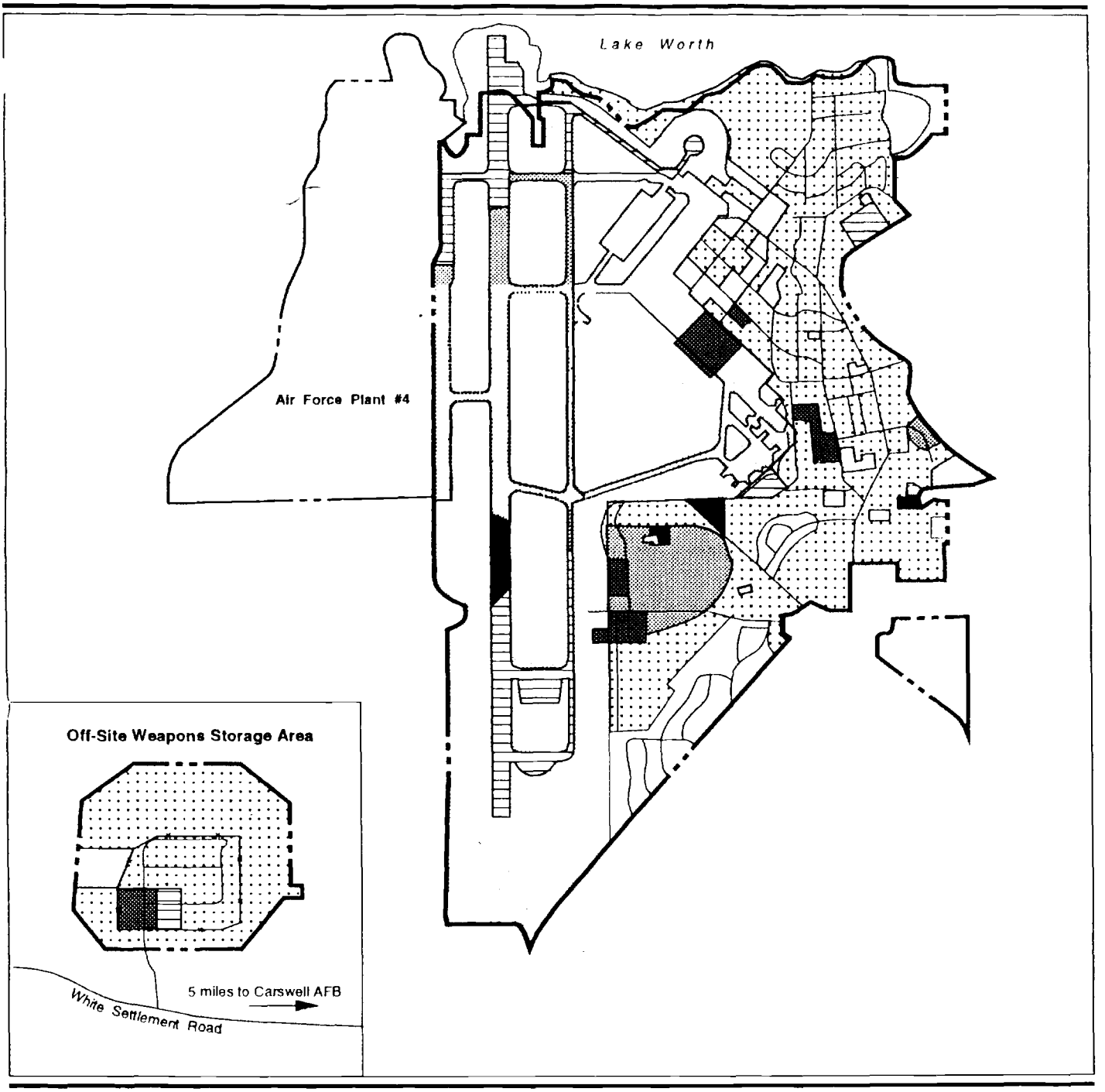
Carswell AFB property, shown on Figure 3-2 as uncontaminated property, are areas of the base where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas); and areas of the base where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred). Category 1 properties on Carswell AFB consist of family housing areas located in the southeastern part of the base, and also the entire off-site Kings Branch residential area.

3.4.2 Areas Where Only Storage Has Occurred

Category 2 properties encompass most of the eastern part of the base and most of the Off-Site WSA.

3.4.3 Areas Where Storage, Release, Disposal, and/or Migration Has Occurred, but Require No Remedial Action

Paved runways and taxiways at the north and south ends of the airfield area are classified as Category 3. Two separate IRP areas along the eastern base boundary and an IRP site at the Off-Site WSA are also Category 3 properties.



EXPLANATION

- Uncontaminated Property (Category 1)
- Hazardous substance stored, no release (Category 2)
- Hazardous substance release, below action levels (Category 3)
- Hazardous substance release, all actions have been taken (Category 4)
- Hazardous substance release, not all actions have been taken (Category 5)
- Hazardous substance release, no actions taken (Category 6)
- Areas requiring additional evaluation (Category 7)
- Base Boundary
- Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Note: Information current as of November 12, 1993 and is subject to revision

Environmental Condition of Property

Figure 3-2

3.4.4
Areas Where Storage, Release, Disposal, and/or Migration Has Occurred, and All Remedial Actions Have Been Taken

Two small separate areas of Category 4 properties are associated with IRP sites in the south-central part of the base, and a portion of the southern half of the main runway overlying an IRP site is also Category 4.

3.4.5
Areas Where Storage, Release, Disposal, and/or Migration Has Occurred, and Action is Underway, but Not Final

Category 5 properties include the paved runways and taxiways in the central part of the airfield area, which overlie the TCE plume; an area overlying the TCE plume east of the flightline area in the south-central part of the base; and an IRP site along the eastern base boundary.

3.4.6
Areas Where Storage, Release, Disposal, and/or Migration Has Occurred, but Required Response Actions Have Not Been Taken

Several parcels scattered around the central, eastern, and southern portions of the base and the southwest corner of the fenced part of the Off-Site WSA (all associated with IRP sites) are classified as Category 6.

3.4.7
Unevaluated Areas or Areas Requiring Additional Evaluation

The majority of Category 7 properties are the unpaved areas of the airfield in the western part of the base; and an adjacent, large area with an aircraft apron and associated facilities in the central part of the base. The hospital area in the northeast corner of the base and the firing range on the eastern base boundary are Category 7. Several other small parcels, generally associated with specific facilities in the eastern half of the base, and the Explosive Ordnance Disposal (EOD) range in the western part of the Off-Site WSA are also Category 7 properties.

3.4.8
Suitability of Installation Property for Transfer by Deed

Areas determined to be suitable for transfer by deed have not been identified on a basewide basis by the BCT. Development of a comprehensive suitability-of-transfer map (Figure 3-3) is pending disposal decisions for each parcel. Further investigations on base and for adjacent off-base properties to determine the environmental condition of the property, as well as remedy selection decisions to be made by the BCT, are also pending.

A Finding of Suitability to Transfer (FOST) for Parcel C is being developed and is pending results of the EBS and completion of the associated National Environmental Policy Act (NEPA) as amended documentation.

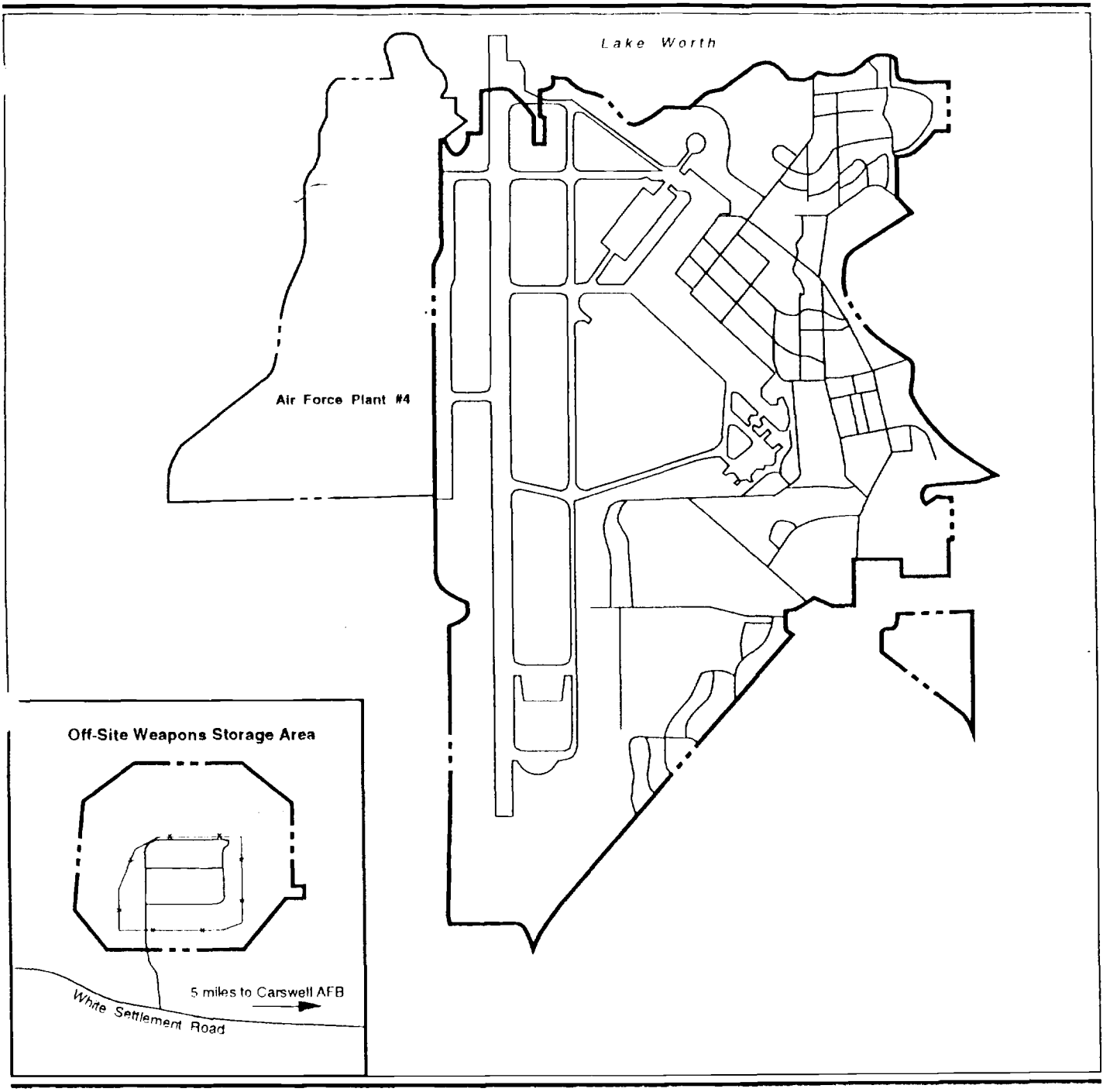
3.5 Status of Community Involvement

Several procedures have been implemented at Carswell AFB to promote proactive community relations. An Environmental Advisory Group was formed in July 1992 to brief the status of ongoing IRP and compliance activities, and other related disposal and reuse issues. Advisory Group members include representatives from Carswell AFB, AF Plant 4, AFBCA, TNRCC, U.S. EPA Region VI, AFCEE, COE, CRA, and city/state officials and their technical support staff. Five meetings were held between July 1992 and February 1993. Since AFBCA took over the environmental program, a Restoration Advisory Board (RAB) has been formed and will have regular meetings, superseding the Environmental Advisory Group. The impetus for the change came in President Clinton's Five-Point Plan and the guidance centered therein.

Communications regarding the TCE-contaminated groundwater plume that has migrated beneath Carswell AFB are performed under the AF Plant 4 IRP. AF Plant 4 has formed a Technical Review Committee (TRC) and has a Community Relations Plan (CRP), in accordance with their FFA. The TRC and CRP provide a means to promote community involvement and positive relations in the ongoing AF Plant 4 IRP activities, including the TCE-contaminated groundwater plume remediation. The RAB will be integrated into the TRC meetings at AF Plant 4.

An Administrative Record has been prepared for the Carswell AFB IRP. A copy of the Administrative Record is on base. Copies of the restoration-related documents are located in the local library (White Settlement Public Library) and in downtown Fort Worth to encourage public review of ongoing IRP activities. A CRP has been developed by the COE Fort Worth District. The final draft of the CRP was received March 1994. The plan identified the objectives and techniques to provide information concerning ongoing IRP activities and promote positive community relations.

The public scoping process and the Draft EIS (DEIS) public review process were conducted in support of the disposal and reuse EIAP. Public notification through press releases and correspondence, interviews, and formal meetings were implemented to solicit public involvement and to provide inputs to the EIS. An EIS for the Disposal and Reuse of Carswell AFB will be filed with the U.S. EPA in May 1994. The EIS will include a discussion of RAs for IRP sites where this is known.



EXPLANATION

Suitability of Property for Transfer

— - - — Base Boundary

— - - — Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Figure 3-3

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TAB

CHAPTER 4.0

Chapter 4
Installation-Wide Strategy for Environmental Restoration

This section describes and summarizes the installation-wide environmental restoration and compliance strategy for Carswell AFB. The base has had an active environmental restoration program since 1984. Since base closure was announced in 1990, base restoration activities have considered closure issues.

Additional sites are currently being evaluated for addition to the base environmental restoration program. SWMU sites would be managed and restored under the Texas Solid Waste Disposal Act. Non-SWMU sites would be initially managed as IRP sites. Because the base is not an NPL site, the environmental restoration program is not required to be conducted under CERCLA. Most of the base's IRP sites are also SWMUs listed on the state-issued Part B permit, which requires investigations and documentation be conducted in compliance with the Texas RCRA-authorized program. Under the permit, the TNRCC acts as the lead regulatory agency for SWMUs. The base has a good working relationship with the regulators in the TNRCC, and, for this reason, IRP sites that are initially managed under CERCLA would likely be remediated under the Texas Solid Waste Disposal Act.

4.1
Zone/OU Designation and Strategy

4.1.1
Zone Designations

IRP sites were grouped into OUs based on 1990 DBCRA-recommended reuse parcels. Investigative zones were not established for the base. Figure 4-1 presents the OU composition and deliverable dates.

4.1.2
OU Designations

Strategy. Carswell AFB OUs ensure that the environmental investigation activities will be organized and managed in a consistent manner with the property reuse and disposal activities. These OUs correspond to the disposal and reuse parcels; these parcels may change in response to the 1993 DBCRA recommendations. OU 1 is geographically the same as reuse Parcel A. OU 2 consists of sites in Parcel B, and OU 3 is the same as Parcel H. Any future IRP sites would be placed into an OU based on their geographic locations in a reuse parcel. Table 4-1 depicts the relationship between IRP sites, OUs, and parcels.

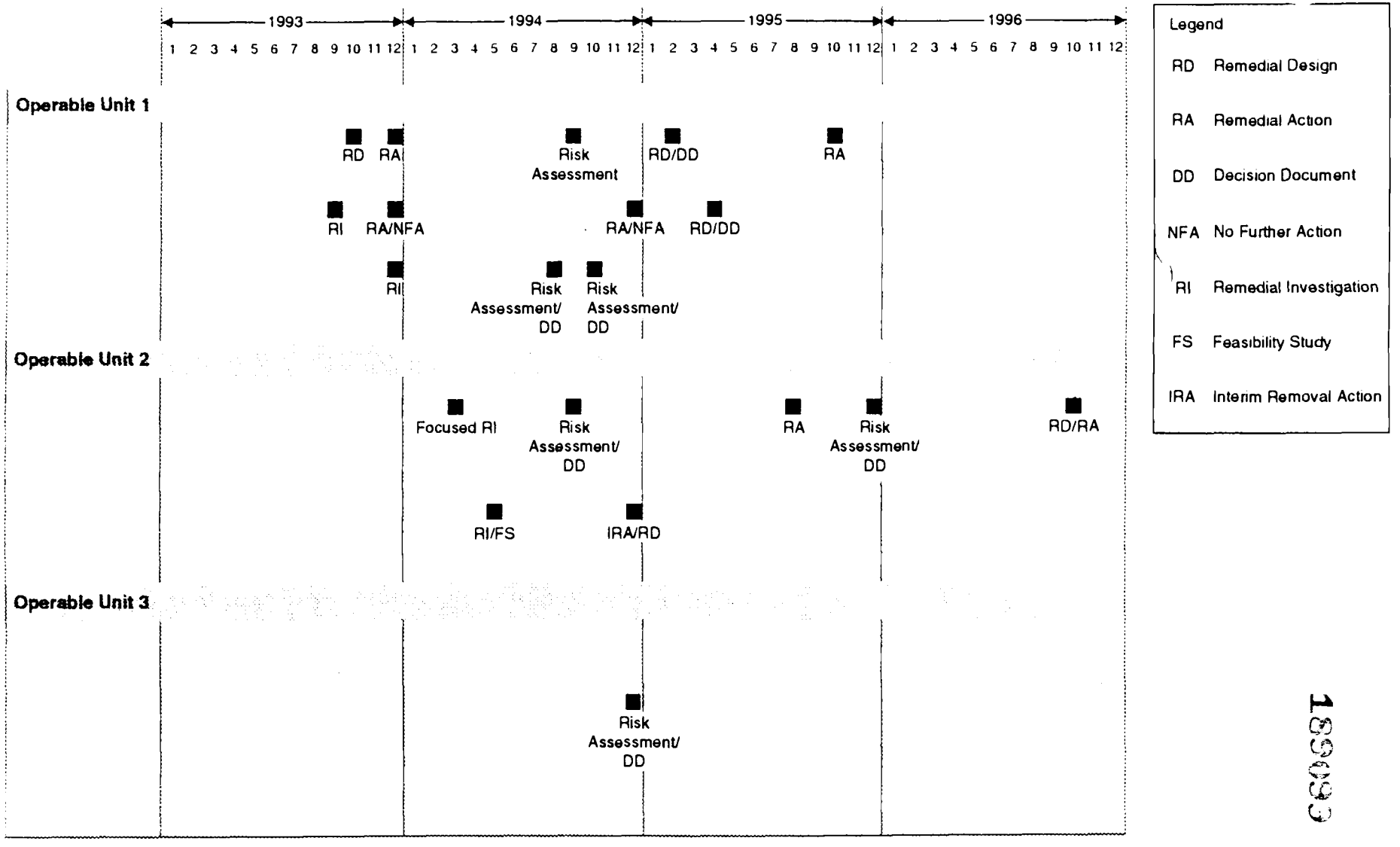

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Figure 4-1
Sequence and Primary Document Timeline for OUs

Table 4-1. Relationship Between IRP Sites, OUs, and Parcels

Operable Unit (Zone)	Parcel	Site
OU 1	A	LF-04
OU 1	A	LF-05
OU 1	A	LF-06
OU 1	A	WP-07
OU 1	A	FT-09
OU 1	A	SD-10
OU 1	A	ST-14
OU 1	A	OT-18
OU 1	A	DP-17
OU 2	B	LF-01
OU 2	B	SD-13
OU 2	B	ST-16
OU 2	B	East Area Groundwater Site
OU 2	G	None
OU 3	H	OT-15
OU 5	F	None
OU 6	C	None
OU 7	D	None
OU 8	E	None
N/A		LF-02
N/A		LF-03
N/A		AF Plant 4
N/A		FT-08
N/A		WP-11
N/A		OT-12
N/A		OT-15

Actions/Recommendations. None at this time.

Office of Primary Responsibility (OPR): Not applicable

Schedule: Not applicable

4.1.3 Sequence of OUs

Strategy. Reuse parcel priorities are considered in determining the sequence and schedule of ongoing and new restoration activities within each OU. However, sites are generally managed individually with consideration given to reuse parcel priority. Figure 4-1 presents the

sequence and primary document timeline for OUs. The sequence for cleanup of OUs is listed in Table 4-2.

Table 4-2. Cleanup Sequence

		Environmental		Cleanup	Reconcile
A	1	Medium	High	1	LF-04
A	1	Medium	High	1	LF-05
A	1	Low	High	1	LF-06
A	1	Medium	High	1	WP-07
A	1	Low	High	1	FT-09
A	1	Low	High	1	SD-10
A	1	Medium	Low	1	ST-14
A	1	Medium	High	1	07-18
A	1	None	High	1	DP-17
B	2	None	High	2	LF-01
B	2	Medium	Low	2	SD-13
B	2	High	High	2	ST-16
B	2	Medium	Medium	2	East Gate 12
G	2	None	Low	None	None
H	3	Low	Low	3	OT-15
F	5	Low	Medium	3	Golf Course
C	6	Low	Low	3	Housing
D	7	Low	High	3	Medical
E	8	Low	Low	3	Housing

Actions/Recommendations. None at this time.

OPR: Not applicable

Schedule: Not applicable

4.1.4 Early Actions Strategy

Strategy. RAs are implemented on an as-needed site basis to expedite restoration activities and to minimize potential risks to human health and the environment. Interim actions to remove contaminated soils are scheduled for 1994 for Sites LF-06 and SD-13. These actions will be proactive source cleanups while conducting investigations and risk assessments on groundwater. An RA to remove contaminated groundwater at Site ST-16, scheduled for summer 1993 in response to a Notice of Violation (NOV) issued to the base for a hydrocarbon leak into the Trinity River, has been delayed due to a need for more site characterization. The removal of low-level radium source of radioactive contamination at Site OT-15 (SWMU 60) is currently underway.

In addition to IRP site RAs, 80 drums containing hazardous drill cuttings and purge water generated during CERCLA Phase II and RI/FS investigations were removed between October 1993 and August 1994.

A treatability study will be conducted by AFCEE in 1993 as part of an RD on Site ST-14. This study will involve bioventing soil contaminated by hydrocarbons. This site is now in the RA phase, with RA continuing until the year 2000. Table 4-3 summarizes the planned removal actions and the treatability study.

Table 4-3. Environmental Restoration Planned Early Actions

Site	Action	Objective	Time Frame
LF-06	Remove contaminated soil (possible buried drums of hydraulic fluid, construction rubble) while conducting investigations and risk assessments on groundwater	Proactive contaminant source cleanup	Removal scheduled for 1995
SD-13	Remove contaminated soil (hydrocarbons) while conducting investigations and risk assessments	Proactive contaminant source cleanup, may also remove sources of contamination groundwater in the East Area Groundwater Site	Removal scheduled for 1994
ST-16	Remedial action to groundwater in response to NOV issued for a hydrocarbon leak into the Trinity River	Remediate leak	Summer 1994
OT-15	Remove radium source	Remediate radioactive contamination	Removal scheduled for 1994
Site No.	**Treatability Description**	**Objective**	**Time Frame**
ST-14	Biovent soil contaminated by hydrocarbons	Eliminate contamination in support of property transfer	To be performed in 1993/1994

Actions/Recommendations. The BCT will continue to identify sites for interim removal actions.

OPR: Remedial Project Manager (RPM), AFBCA/OL-H

Schedule: Ongoing

4.1.5 Remedy Selection Approach

Strategy. Alternative RAs will be selected based on the following criteria:

- Reuse

- Concentration and distribution of contaminants at the site
- Technical feasibility and effectiveness of the possible remedial alternatives
- Estimated cost of each alternative
- Regulatory compliance.

The remedy selection approach for POL-contaminated soils includes bioventing and in-situ remediation depending on the site. Bioventing will be considered for sites with large volumes of contaminated soils.

Actions/Recommendations. The BCT will research the thermal treatment process, prepare a package on it, request funding for implementation, and request an AFCEE contract for the work.

OPR: BEC, AFCEE

Schedule: In progress

4.2
Compliance Strategy

Basic compliance strategies to be used during the reuse and disposal of parcels from Carswell AFB have been developed. The strategies are detailed below.

Under the MOA signed by all involved parties in the transfer of Carswell AFB from ACC to AFBCA, the environmental compliance responsibilities were distributed. AFBCA will be responsible for IRP and EC-CR programming, budgeting, and execution; selecting environmental management and support personnel to comprise OL-H; monitoring IRP and EC-CR programs; and preparing environmental procedures and guidance to the base. OL-H will assume IRP and EC-CR project management and programming responsibilities, provide environmental technical support, and ensure all environmental hazards are identified and remedied. OL-H assumed responsibility for all IRP and environmental compliance responsibilities with the 30 September 1993 closure. The 301 Tactical FW (AFRES) will continue to operate in compliance with all federal, local, state, and Air Force rules, regulations, and policies. Specific compliance actions are listed in Table 4-4.

4.2.1
Storage Tanks

Underground Storage Tanks

Strategy. The UST strategy is to remove all nonessential USTs and leave in place 17 USTs for use by the 301 Tactical FW and 5 tanks for use by the final recipients of the land. Three additional tanks will be left in place for use by the AFBCA. The pipelines servicing the hydrant fueling system will be emptied and removed when the hydrant system is removed. Where the pipeline is inaccessible, it will be emptied, tested for leaks, and abandoned in place in accordance with the TNRCC regulations.

Actions/Recommendations. The BCT should consider cost effectiveness in determining the appropriate pipeline removal/abandonment strategy.

OPR: AFBCA/OL-H, AFCEE, TNRCC

Schedule: Complete

Table 4-4 Environmental Compliance Planned Early Actions

Site	UST No.	Action	Objective	Time Frame
Parcel A	1015-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1040-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1064-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1064-2	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1194-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1411-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1420-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1425-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	1427-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	3359-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	3360-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4102-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4111-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4115-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4127-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4-141-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4143-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4145-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4150-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4152-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4153-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4153-2	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4154-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4155-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4171-1	Removal	Compliant with EPA and TNRCC	FY 1994
Parcel A	4210-1	Removal	Compliant with EPA and TNRCC	FY 1994

Aboveground Storage Tanks

Strategy. The compliance strategy for aboveground storage tanks is to remove nonessential tanks and drain essential tanks before transfer to AFBCA. The pipeline servicing the essential aboveground storage tanks will remain in use. Pipelines servicing nonessential tanks will be emptied and removed.

Actions/Recommendations. The CRA should determine which aboveground storage tanks are essential so that nonessential tanks can be removed.

OPR: AFBCA/OL-H, AFCEE, CRA

Schedule: Complete

The BCT should consider the cost effectiveness in determining the appropriate pipeline removal/abandonment strategy.

4.2.2 Hazardous Materials/Waste Management

Strategy. All of the hazardous waste accumulation, satellite accumulation, and the Texas Class I waste accumulation points, except for the three accumulation points operated by the 301 Tactical FW and one accumulation point operated by AFBCA/OL-H, will be closed in accordance with Texas regulations.

The AFBCA/OL-H will maintain the hazardous waste permit and will assume responsibility for hazardous waste generated by other military tenants. AFBCA/OL-H will control the TSD with DRMO as the operating agent. The TSD is scheduled to close on 1 January 1994. At that time, it will be closed in accordance with RCRA regulations. AFBCA/OL-H will also review all Spill Prevention and Response Plans and Hazardous Waste Management Plans for both military and nonmilitary tenants. Compliance with RCRA regulations will be ensured by inspections conducted by AFBCA/OL-H.

Actions/Recommendations. The BCT should validate and verify the number and location of hazardous waste accumulation points to be closed. The BCT will ensure that the hazardous waste accumulation points, and the TSD area are closed in accordance with RCRA regulations. In addition, the BCT will ensure the requirements levied under the Hazardous Waste Generator's Permit are fulfilled.

OPR: AFBCA/OL-H, AFCEE

Schedule: FY 1995

AFBCA/OL-H will review the Hazardous Waste Management Plans and Spill Prevention and Response Plans required from tenants. AFBCA/OL-H will also conduct inspection of all tenants to ensure compliance with RCRA requirements.

OPR: AFBCA/OL-H, AFCEE

Schedule: FY 1995

4.2.3 Solid Waste Management

There are no solid waste facilities operating at Carswell AFB.

4.2.4
Polychlorinated Biphenyls (PCBs)

Strategy. Except for the eight capacitors at the airfield, the base was PCB-free upon transfer to AFBCA. The vault where the capacitors are located will be marked in accordance with the Toxic Substances Control Act (TSCA). If new PCB equipment is found after transfer, the equipment will be removed from service and disposed of in accordance with TSCA.

Actions/Recommendations. AFBCA should transmit the location of the eight PCB capacitors to the runway lessee and/or recipient of the runway. AFBCA should also update the annual PCB location documents required by U.S. EPA until the runway is transferred to the final recipient.

OPR: AFBCA/OL-H

Schedule: Complete

4.2.5
Asbestos

Strategy. If reuse requires asbestos removal because the asbestos is accessible and friable, the AFBCA/OL-H will remove the asbestos as required by Texas regulations and DOD policy.

Actions/Recommendations. AFBCA should transmit the asbestos conditions to the lessee and recipients of building.

OPR: AFBCA/OL-H, AFCEE

Schedule: Complete

4.2.6
Radon

Strategy. Since the Radon Assessment and Management Plan (RAMP) indicated there was no immediate problem with radon, the Air Force does not plan on completing any further investigations. AFBCA will ensure the deed of transfer will carry a disclosure of the requirement for radon investigations within 3 years.

Actions/Recommendations. AFBCA/OL-H should include a disclosure statement in the deed of transfer to communicate the need for further radon investigation.

OPR: AFBCA/OL-H, AFCEE

Schedule: Complete

4.2.7
RCRA Facilities (SWMUs)

Strategy. Continue with the present strategy where 15 SWMUs are being addressed as IRP sites and 5 SWMUs have RFI Remediation Plans (RPs) with approval to proceed.

Actions/Recommendations. Ensure funding and coordination to enable closure through the respective programs.

OPR: AFBCA/OL-H

Schedule: Complete

4.2.8
NPDES Permits

Strategy. AFBCA/OL-H has assumed responsibility for the NPDES discharge permits and the industrial water discharge permit. They will ensure the NPDES discharges are tested and the quarterly report is sent to the U.S. EPA. AFBCA/OL-H will assume responsibility for the water distribution system at Carswell AFB and will require lessees and the final recipients of the parcels to obtain their own industrial wastewater discharge permit. They will ensure that TNRCC drinking water requirements are met.

Actions/Recommendation. AFBCA/OL-H should obtain a contractor or hire qualified personnel to perform the sampling and to prepare the report as required by the NPDES permit and TNRCC drinking water requirements.

OPR: AFBCA/OL-H, AFCEE

Schedule: This action has been completed.

4.2.9
Oil/Water Separators

Strategy. The basic strategy is to leave all oil/water separators in place. All separators will be pumped, cleaned, and inspected for leaks. In addition, samples will be taken from the area surrounding the separator and tested. If either the inspection or sample analysis indicates the separator leaked, a determination will be made to either fix or remove the separator. The option chosen will depend on the condition of the separator and the extent of leakage; however, the contamination will be remediated. An assessment on 11 oil/water separators was completed in October 1994. The assessment recommended upgrades of several units.

Actions/Recommendations. AFBCA/OL-H should identify the oil/water separators that will not be required for reuse. This action will be coordinated with the Navy.

OPR: AFBCA/OL-H, AFCEE, Navy

Schedule: This action has been completed.

4.2.10
Air

Strategy. AFBCA/OL-H plans on using the banked emissions credits to help offset emissions from equipment operated by tenants and the final recipients of the land.

Actions/Recommendations. AFBCA/OL-H should determine what emission credits are available and apply for credit.

OPR: AFBCA/OL-H, AFCEE, 301 Tactical FW

Schedule: Currently being worked with 301 Tactical FW

The recovered air conditioner Freon will be used as credit against the cost of removing the Freon from the air conditioners.

OPR: AFBCA/OL-H, AFCEE

Schedule: Ongoing

4.2.11
Lead-Based Paint

Strategy. AFBCA/OL-H plans to survey housing units at Kings Branch and Wherry areas.

Actions/Recommendations. Results of the lead-based paint survey will be made available to potential owners. Remediation will be performed prior to transfer pursuant to Air Force Policy.

Schedule: Complete

4.3
Natural and Cultural Resources Strategy

4.3.1
Threatened and Endangered Species (State and Federal)

No state- or federal-listed threatened or endangered species are known to live on Carswell AFB; therefore, no negative effects are expected.

4.3.2
Sensitive Habitats

Sensitive great blue heron rookeries to the north of the base, across from Lake Worth, should be disturbed as little as possible by overflights or human intrusion.

4.3.3 Wetlands

Wetland impacts under 10 acres typically qualify under the nationwide permit for wetland deposition and fill. The COE should be notified of impacts to any amount of wetlands to ensure these wetlands qualify for inclusion under the nationwide permit. Otherwise, a permit under Section 404 of the CWA may be required for wetland fill.

4.3.4 Surface Waters

Surface waters are continuously monitored through NPDES sampling. Stream discharges are also monitored on a quarterly basis. This information is reported to U.S. EPA on a regular basis.

4.3.5 Floodplains

No areas impacted by floodplains exist at Carswell AFB.

4.3.6 Paleontological Resources

No significant paleontological resources have been identified within the boundary of Carswell AFB.

4.3.7 Historic Structures

No significant historic archaeological sites have been identified within the boundary of Carswell AFB. An historic structures inventory is complete and has been coordinated with the Texas SHPO. Results will be incorporated into the text of the FEIS.

4.3.8 Prehistoric Sites

No significant prehistoric sites have been identified within the boundary of Carswell AFB.

4.3.9 Traditional Resources

No significant traditional resources have been identified within the boundary of Carswell AFB.

4.3.10 Other Applicable Categories

None.

4.4
Community Involvement/Strategy

Strategy. The strategy for community relations for restoration-related activities is documented in the CRP. RAB meetings will continue to be held to inform the local community of restoration and compliance issues and activities. In addition, community involvement for AF Plant 4 remediation activities beneath Carswell AFB will continue to be incorporated into AF Plant 4 CRP and TRC meetings.

Actions/Recommendations. The AFBCA/OL-H will complete and implement the CRP for the Carswell AFB IRP. In addition, the AFBCA/OL-H will complete and maintain the Administrative Record and annotated bibliography for Carswell AFB and AF Plant 4 restoration-related documents. The OL-H will become a member of the AF Plant 4 TRC to promote communications and ensure appropriate coordination of remediation activities on the base property.

OPR: AFBCA/OL-H

Schedule: Ongoing

4.5
Environmental Condition and Suitability for Transfer Strategy

Strategy. A basewide EBS was completed in early 1994 to determine the environmental condition of the base property and to identify areas requiring further study. The EBS identified the extent of groundwater contamination beneath the base property based on existing documentation of past releases by AF Plant 4 and Carswell AFB. It is recognized that as restoration and compliance activities proceed, the environmental condition of parcels will likely change status. Determination of the current environmental condition of property will continue to be performed by the Project Team on an as-needed basis for a specific property or parcel of land to support interim leases.

In addition, a strategy to develop and maintain a basewide suitability-for-transfer map has been established. Determinations by the BCT will continue on an as-needed basis in response to interim lease applications. The parcel-specific strategy will consider a set of criteria to determine whether a plot is:

- Suitable for transfer by deed with restrictions/notifications or other institutional control due to residual contamination that exists after the RA is completed or after the RA has been initiated and demonstrated
- Suitable for transfer by deed with no restrictions
- Not suitable for transfer, but may be leased with specific lease restrictions
- Not suitable for transfer or lease.

Actions/Recommendations. As the results of environmental investigations and remediation activities become available, the BCT should develop a process to update and maintain the

status of the environmental condition for each parcel or property. In addition, an assessment of off-base properties will be performed to determine the condition of adjacent properties, in accordance with CERFA.

OPR: AFBCA/OL-H

Schedule: Ongoing

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CHAPTER 5.0

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Chapter 5
Environmental Master Schedules

This chapter presents the Carswell AFB master schedule of anticipated environmental restoration and compliance activities. Planned restoration activities are graphically summarized in Figure 5-1 and compliance activities are summarized in Figure 5-3.

5.1
Environmental Restoration Program

5.1.1
Response Schedules

The planned environmental restoration schedule for Carswell AFB is summarized in Figure 5-1. This schedule is based upon the following general assumptions:

- Funding for the FY 1994 program will be approved and projects funded by the quarter they are to be accomplished.
- Contract award will occur within 90 days of receipt of funding.
- The RD phase contractor will write the DD and be the inspector for the RA.

Assumptions for specific sites are listed below.

Landfill-04 (LF-04), Landfill-05 (LF-05), and Waste Burial Site-07 (WP-07):

- Risk Assessment result is worst case (i.e., sites require capping).
- Draft Risk Assessment will be completed in FY 1994 and the RD will be initiated immediately thereafter, if appropriate.
- All three sites will be under the same contract.
- AF Plant 4 is responsible for groundwater beneath these sites.

OT-15 (SWMU 60): WSA

- The buried radium disposal tubes are the only source of contamination.

SD-13: Unnamed Stream

- Focused RI/FS will be completed in spring 1994.
- Soil contamination will require remediation (worst case).
- Groundwater contamination will be addressed under the East Area Groundwater Site IRP site, if established.

ST-16: Base Service Station

- Site is source of leak into Trinity River.
- Soil contamination is worst case with groundwater contamination.

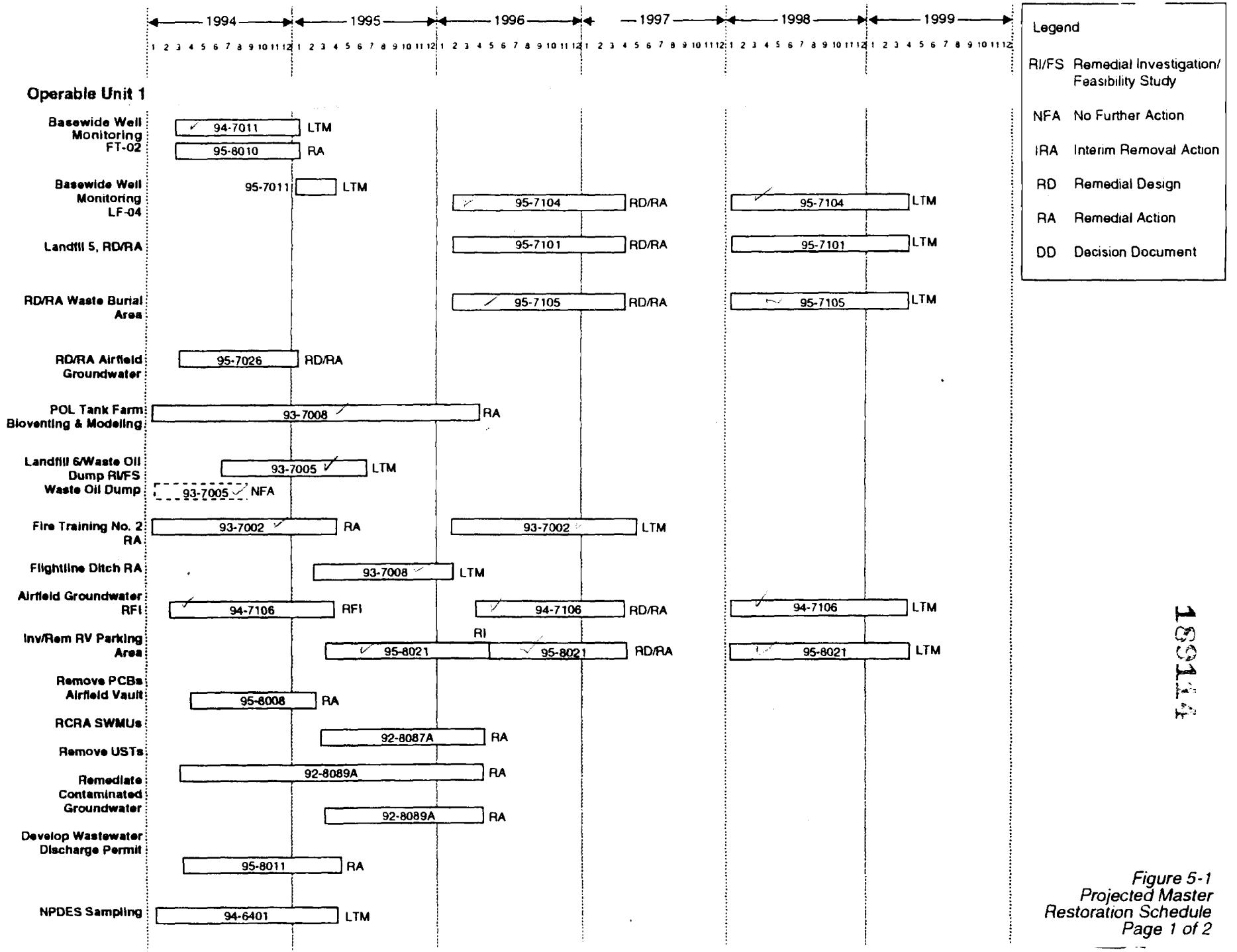

Figure 5-1
Projected Master Restoration Schedule
Page 1 of 2

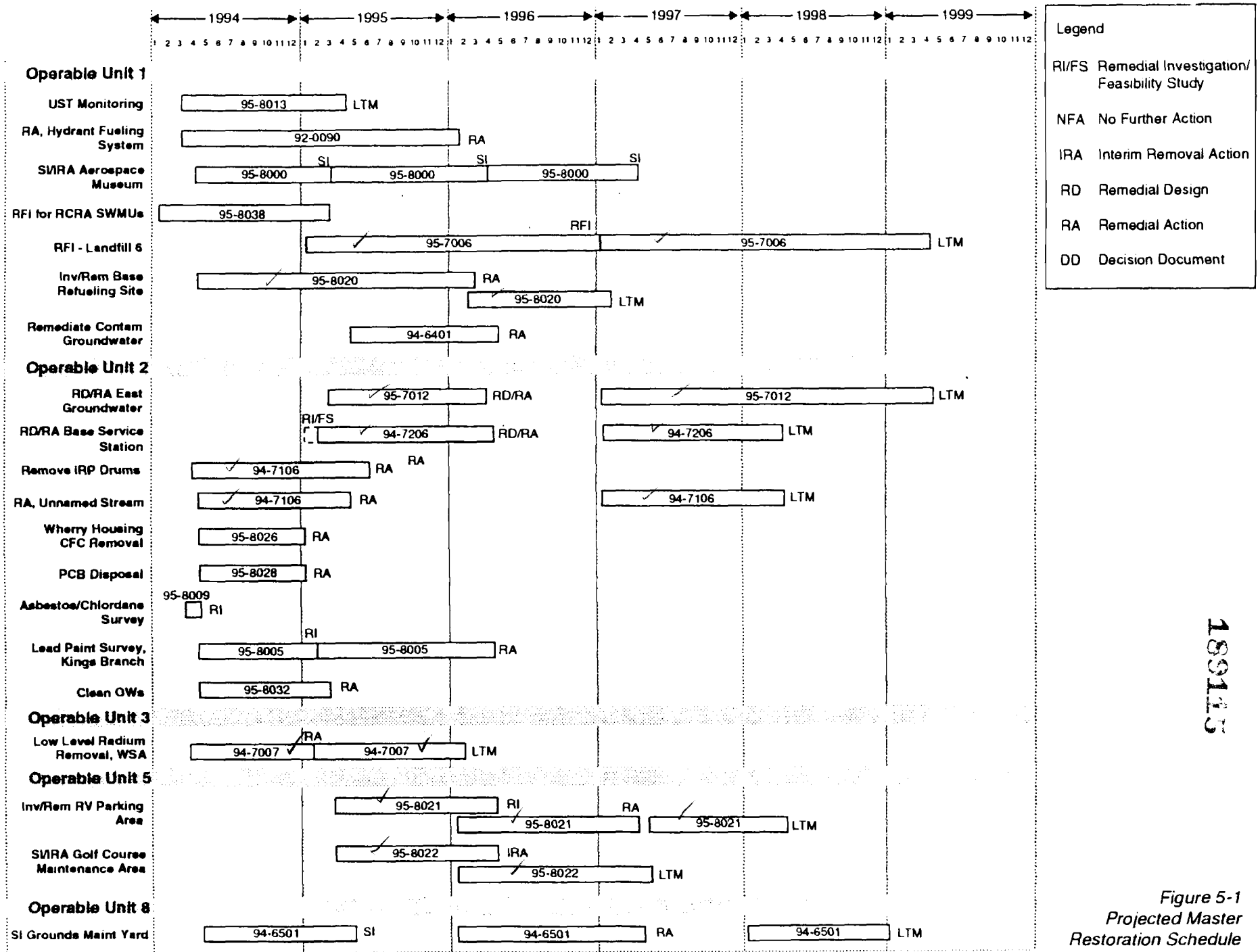

Figure 5-1
Projected Master Restoration Schedule
Page 2of 2

ST-14: POL Tank Farm

- Treatability study is successful.

East Area Groundwater Site:

- Groundwater in the area is contaminated.

LF-06: Landfill-06

- Groundwater is not contaminated.
- IRA may result in NFA.

5.1.2
Requirements by Fiscal Year

Anticipated funding requirements for restoration activities through FY 1996 is shown in Appendix A, Table A-1.

5.2
Compliance Programs

5.2.1
Master Compliance Schedules

The compliance schedules for Carswell AFB are summarized in Figures 5-3. They are based upon the following assumptions:

Removal of USTs:

- USTs did not leak and do not require soil remediation.

Closure of TSD area:

- Hazardous waste can be disposed of by 31 December 1993.

Closure of hazardous waste accumulation points:

- No groundwater or soil contamination.

PCB Retrofilling:

- PCB concentration will be reduced to less than 50 parts per million with two fillings.

PCB Replacement:

- Transformers will be manufactured and installed prior to base closure.

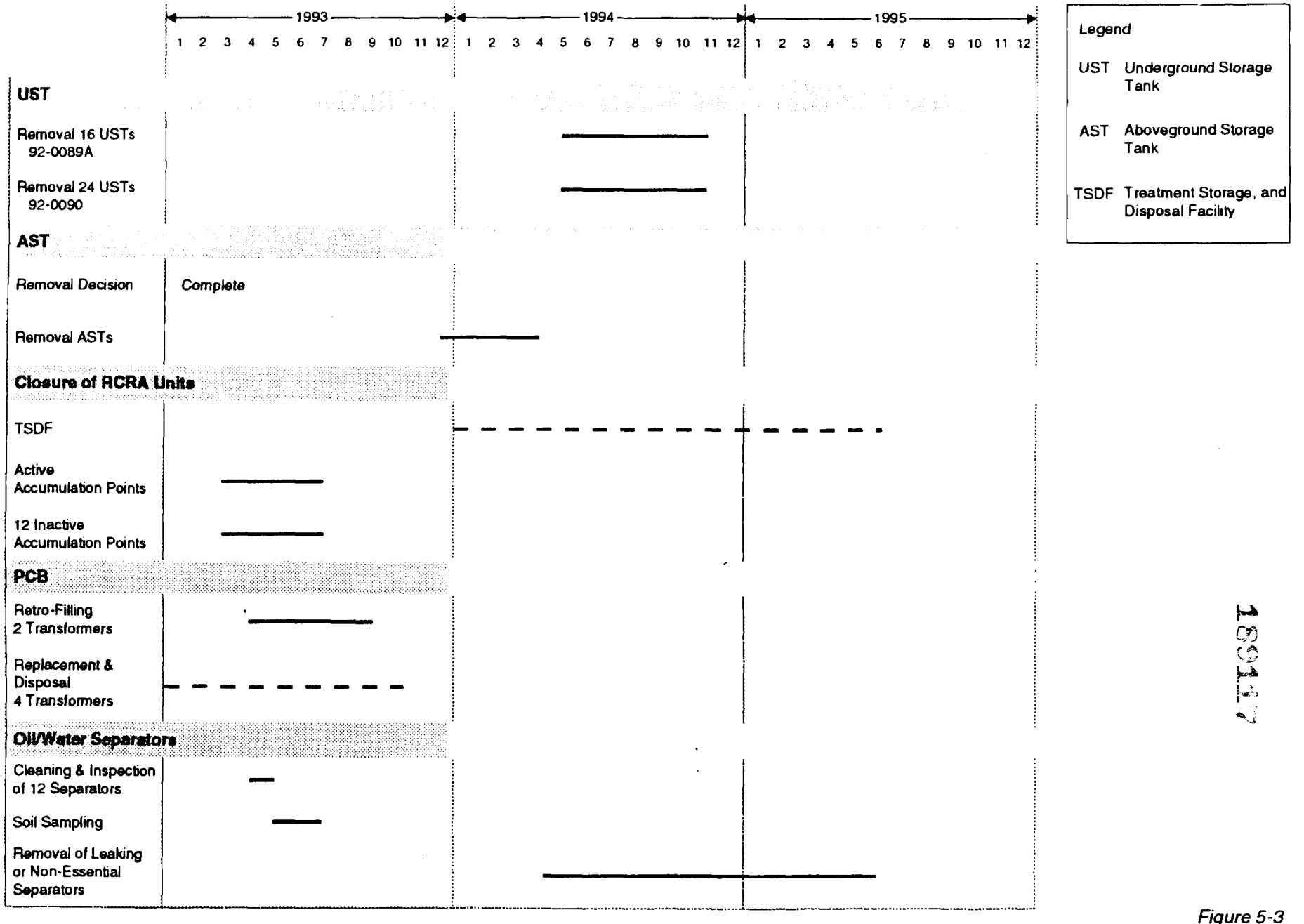

Figure 5-3
Projected Master Schedule for
Closure-Related Compliance Programs
Page 1 of 2

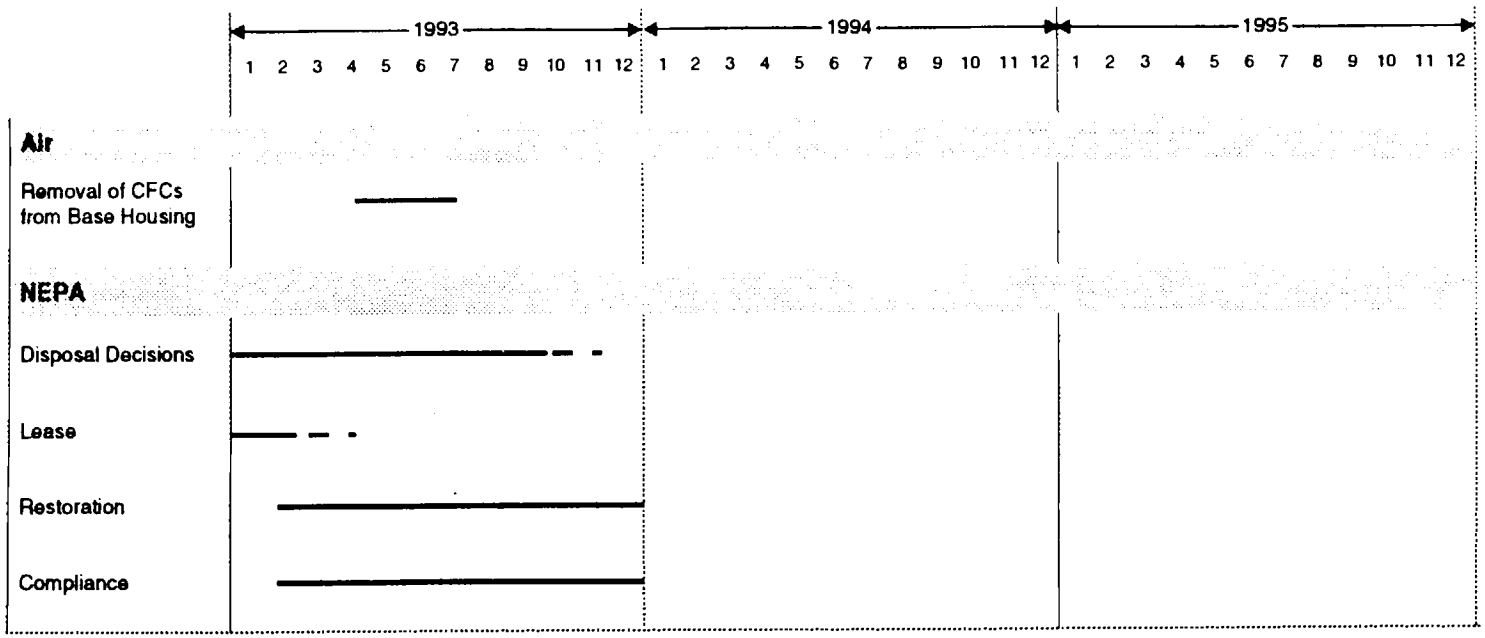

Figure 5-3
Projected Master Schedule for
Closure-Related Compliance Programs
Page 2 of 2

Oil/Water Separator Soil Assessment:

- A delivery order was issued in June 1993.

Oil/Water Separator Removal:

- Nonessential separators will be identified as a result of the oil/water separator assessment.

Air:

- Chlorinated fluorocarbon (CFC) removal contract will be awarded by 1 August 1993.

5.2.2
Requirements by Fiscal Year

Funding requirements for compliance activities through FY 1993 are shown in Appendix A, Table A-2.

5.3
Natural and Cultural Resources

5.3.1
Natural and Cultural Resources Schedule(s)

See Figure 5-4.

5.3.2
Requirements by Fiscal Year

See Table A-3 in Appendix A.

5.4
BCT Meeting Schedule

BCT meetings will be required for the ongoing restoration and compliance activities. It is recommended that regularly scheduled meetings involving the CRA, regulators, AF Plant 4, 301 Tactical FW, OL-H, and other relevant participants be held to meet the objectives of the Partnering Agreement and MOA, as well as to ensure timely and coordinated decisions and promote communications. In the meantime, the OL-H will continue to attend the AF Plant 4 TRC meetings to facilitate communications.

The RAB meetings will be held on a quarterly basis starting in January 1994. Future agenda items include: BCP status, restoration activity status, compliance activities status, programming/funding status and requirements, and CERCLA §120(h) considerations. When completed, Table 5-1 will show the BCT meeting schedule.

Table 5-1. BCT Team Meeting Schedule

1994		1995		1996	
Date	**Topic**	**Date**	**Topic**	**Date**	**Topic**
12 January	BCT	24 January	BCT	11 January	BCT
26 January	RAB	15-16 February	BCT	11 January	RAB
3 February	BCT	18 May	BCT	8 February	BCT
1 March	RAB	18 May	RAB	14 March	BCT
19 May	BCT	8 June	BCT	4 April	RAB
10 June	BCT	8 June	RAB	11 April	BCT
14 July	RAB	10 August	BCT	9 May	BCT
29 August	BCT	7 September	RAB	13 June	BCT
5 September	RAB	5 October	RAB	1 August	RAB
26 September	BCT	12 October	BCT	8 August	BCT
31 October	BCT	9 November	BCT	12 September	BCT
10 November	BCT	14 December	BCT	10 October	BCT
	BCT			7 November	RAB
				14 November	BCT
				12 December	BCT

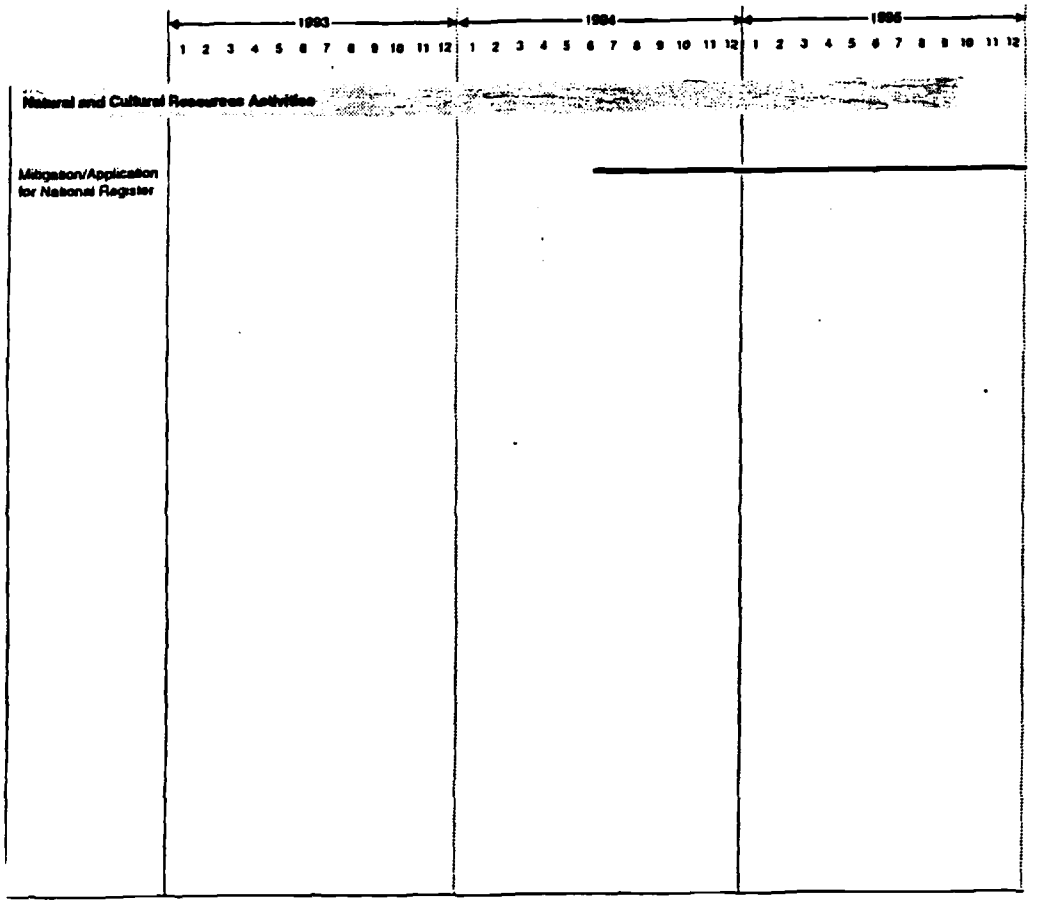

Figure 5-4
Projected Schedule for Natural and Cultural Resources Activities

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TAB

CHAPTER 6.0

Chapter 6
Technical and Other Issues to be Resolved

This section summarizes technical and other issues that are yet to be resolved. These issues include information management; the usability of historical data; data gaps; natural (background) levels of elements and compounds in soil, groundwater, surface water, and sediments; risk assessment; and cleanup standards.

6.1
Data Usability

This section summarizes unresolved issues pertaining to the validity of using historical data sets in the base environmental program.

6.1.1
BCT Action Items

The following actions are necessary to determine the usability of historical data sets in the base environmental restoration program:

- Begin to evaluate historical data sets at the base against *The Handbook to Support Installation Restoration Program Statements of Work, Volume I, Remedial Investigations/Feasibility Studies* and other accepted validation procedures for usability in risk assessments and hydrogeologic characterizations of source and groundwater target areas
- Continue to ensure the usefulness of data collected during current and future project phases by continuing to implement and reformulate data quality management procedures.

6.1.2
Rationale

Historical analysis data can contribute to the completion of site characterizations and risk assessments by filling data gaps. Current and future data from each data collection system (e.g., laboratories, field laboratories, field screening techniques) are critical to the completion of site characterization efforts, risk assessments, and ultimately, the selection of RAs to protect human health and the environment.

6.1.3
Status/Strategy

The BEC is aware that documents and other historical data sources do not meet Service Center Handbook or U.S. EPA criteria for use because of poor documentation and/or quality. An assessment of documents is needed to determine whether:

- Technical specifications were followed
- Accurate and precise data collection was accomplished

- Both field and laboratory documentation were sufficient to document what is known about the data.

The outcome of this assessment will be used to determine the potential use of data or to identify sampling locations that are required to fill data gaps.

Strategies for ensuring the usability of current or future data include the following:

- For current and future field efforts, the AFBCA/OL-H will continue to follow the structured data collection and documentation process (including electronic formats) in the Service Center Handbook and the *IRPIMS Data Loading Handbook.*
- The BEC, in conjunction with the Service Center representative, will ensure that the field and laboratory audit process will continue to be implemented to allow for project compliance assessment, real-time project quality management, and problem-solving through the use of corrective actions.
- The use of field/mobile laboratories, field screening techniques, and other special analytical techniques will be considered and evaluated to facilitate data collection. Each different data collection system shall be evaluated on a case-by-case basis and an assessment made on the intended use of data and of the adequacy of both the field and laboratory quality assurance/quality control (QA/QC) systems.

6.2
Information Management

This section summarizes issues that need to be resolved with regard to managing information gathered and used in the base environmental restoration and compliance programs.

6.2.1
BCT Action Items

The following actions are necessary to ensure that an effective information management system is in place for the base environmental restoration program:

- Establish an on-site central data file. This central file will be a natural extension to the existing IRP Information Management System (IRPIMS) sampling and analysis database, and will also include non-IRP data (e.g., past and present land use, natural resources).
- Require all contractors working at the base to submit all data to the central file in a standardized electronic format. Maintain one integrated database to ensure comprehensive data storage and retrieval.
- Use the central file clearinghouse to distribute quality assured data in standard formats to parties with the need a for basewide perspective in activities at the base, including contractors, Air Force decision makers, and regulators.
- Improve the data analysis capabilities within the base so that data can be analyzed as received. Thus, the results of recent field and laboratory work can be fed back into the

planning loop more quickly, helping to redirect field efforts as they happen and determine when enough data are available to support a decision.

6.2.2 Rationale

Given the number of agencies and contractors associated with the base environmental restoration programs at both Carswell AFB and AF Plant 4, it is important that all parties involved be able to share data for decision making. The establishment and maintenance of an electronic database containing sampling, analytical, and other non-IRP data is the most efficient method of sharing data among parties.

6.2.3 Status/Strategy

Historical data have been submitted by AFCEE for loading into the IRPIMS; seven documents have been submitted. One document has been loaded, five were loaded by November 1993, and the loading status of the remaining document is to be determined. Remaining restoration documents will be submitted for loading, but the schedule for submittal is unknown at this time. The data loading summary status is shown in Appendix B, Table B-1.

6.3 Data Gaps

This section summarizes unresolved issues pertaining to the determination and collection of data needed to complete the Carswell AFB environmental restoration program.

6.3.1 BCT Action Items

The Carswell AFB BCT will ensure that data gaps are identified and filled as needed to conduct the Carswell AFB environmental restoration program. BCT meetings and coordination between the TNRCC and the AF Plant 4 TRC will be used to reach consensus on field sampling efforts needed in FY 1993/1994 to resolve data gaps.

6.3.2 Rationale

Effective identification and filling of data gaps will permit the development of conceptual site models for a risk assessment. However, conceptual model summaries need to be prepared by the BCT for inclusion in the BCP as Appendix E. Effective analysis of data gaps will also facilitate the completion of investigations and risk assessments so that ANSCs and target areas can be delineated.

6.3.3
Status/Strategy

The historic data source review to determine data usability is currently in progress. It may identify data gaps created where data are determined to be not usable. Strategies for identifying and filling data gaps are as follows:

- Identify data gaps from previous studies and let new contracts to collect the additional data required.
- BCT meetings will be used to resolve data gap issues for the field season. A BCT meeting with federal and state regulators will be scheduled to reach a consensus on a scope of work for filling remaining data gaps.

6.4
Background Levels

This section summarizes unresolved issues pertaining to the determination of natural (background) concentrations of elements and compounds in the environment of Carswell AFB.

6.4.1
BCT Action Items

The BCT will establish background concentrations of elements in the environment for use in baseline risk assessment computations and comparison with potential site contaminants. This will ensure that background concentrations are known and are available for performing risk assessments as required for the Carswell AFB environmental restoration program.

6.4.2
Rationale

Background concentration values of elements in soil, groundwater, surface water, and sediments need to be determined before risk assessments can be conducted. The values must be representative of what is naturally occurring and must be concurred with by U.S. EPA and state regulators.

6.4.3
Status/Strategy

A proposed procedure to determine background concentrations is currently under development and will be submitted to the TNRCC for review. The background levels will be determined from historic data collected during the RFIs and IRP site investigations using U.S. EPA and state of Texas-approved procedures and work plans.

6.5
Risk Assessments

This section summarizes unresolved issues pertaining to the completion of risk assessments required to complete the Carswell AFB environmental restoration and associated compliance programs.

6.5.1
BCT Action Items

The BCT is evaluating the role of anticipated land use as a criterion in selecting assumptions in the exposure assessment. A key to the selection of assumptions is to summarize contaminants of concern along with current and future land uses.

6.5.2
Rationale

Because land use affects the number and type of exposure pathways, anticipated or known land uses must be considered when making assumptions about exposure in risk assessments.

6.5.3
Status/Strategy

The BEC has conducted risk assessments on a case-by-case basis; however, no formal strategy for performing risk assessments has been established. A strategy will be established to develop risk assessments to support remedy selection during RD or treatability studies. Assessments will consider future land use, technologies, and the AF Plant 4 IRP.

The BEC will work with the CRA, 301 Tactical FW, AFCEE and other base tenants to ensure that the retained cantonment land uses and reuse decisions are incorporated into risk assessments and RAs.

6.6
Basewide Remedial Action Strategy

Table 6-1 outlines each site, the risks associated with each site, and current and anticipated use of the area.

6.7
Interim Monitoring of Groundwater and Surface Water

Monitoring is scheduled to begin in the third quarter of FY 1994 and continue through FY 1995.

6.8

Excavation of Contaminated Materials

Activities will begin per schedule of restoration activities on a project-specific basis.

6.9

Protocols for Remedial Design Reviews

To be performed in conjunction with project schedules.

6.10

Conceptual Models

Continue to develop conceptual model data summaries for inclusion in Appendix E.

6.11

Cleanup Standards

Texas state cleanup standards for hazardous waste or constituents in soils are found in Subchapter 5: Risk Reduction Standards, TNRCC, 18 Texas Register 3842 (1993) (codified at 31 Texas Administration Code §335.551-335.569). In the absence of federal- or state-mandated cleanup standards for specific hazardous wastes or constituents in soils, the approach for providing remediation criteria for contaminated soils is either through the conduct of a risk assessment specific to a site or the use of more generic guidance levels. The *Interim Final RCRA Facility Investigation (RFI) Guidance, Volume I of IV, Development of an RFI Work Plan and General Considerations for RCRA Facility Investigations* (U.S. EPA 30/SW-89-031, Waste Management Division, Office of Solid Waste, May 1989) provides health-based guidance criteria concentrations for a number of hazardous compounds and elements based on oral and inhalation exposure routes. These health-based criteria are provided for known carcinogens (Table 8-6 of the RFI guidance) and systemic toxicants (Table 8-7 of the RFI guidance). The criteria are subject to change and will be confirmed by the appropriate regulatory agency prior to use. For many compounds listed in Table 6-2 of the RFI guidance, no guidance levels have been developed. Cleanup standards for human health and other criteria are summarized in Tables 6-2 and 6-3.

6.12

Initiatives for Accelerating Cleanup

Initiatives to accelerate cleanup have been incorporated into the IRP. Response actions have been accelerated as much as is currently feasible without development of new technologies. Attempts to further accelerate cleanup activities may adversely affect the integrity of current and planned response actions.

Table 6-1. Future Land Use Risk Assessment for Development of Remedy Selections

		Contaminants					
Site ID	Risks	Groundwater	Soil	Surface/ Sediment	Current Use	Adjacent Uses	Anticipated Uses
LF-01	None	None	None	None	None	Residential	Residential
LF-02	None	None	None	None	None	Industrial	Industrial
LF-03	None	None	None	None	None	Flightline ops	Flightline ops
LF-04	Medium	TCE, metals	TCE, metals	None	None	Flightline ops	Flightline ops
LF-05	Medium	TCE, metals	TCE, metals	None	None	Flightline ops	Flightline ops
LF-06	Medium	Hydrocarbons	Hydrocarbons	None	Parking	Golf course	Parking
W-P07	Medium	TCE, metals	TCE, metals	None	None	Flightline ops	Flightline ops
FT-08	None	None	None	None	None	Flightline ops	Flightline ops
FT-09	Low	Hydrocarbons	Hydrocarbons	Hydrocarbons	None	Flightline ops	Flightline ops
SD-10	Low	Hydrocarbons, Metals	Hydrocarbons, Metals	Hydrocarbons, Metals	Storm drainage	Flightline ops	Flightline ops
WP-11	None	None	None	None	None	Golf course	Golf course
OT-12	None	None	None	None	White house comm.	Firing Range	Firing Range
SD-13	Low	Hydrocarbons	Hydrocarbons	Hydrocarbons	Drainage	Firing Range	None
ST-14	Low	Hydrocarbons	Hydrocarbons	None	POL storage	POL storage	POL storage
OT-15	Low	Radium	None	None	Abandoned	Abandoned	Possible storage
ST-16	High	Hydrocarbons	Hydrocarbons	None	None	Dorms, industrial	Industrial
DP-17	None	None	None	None	None	Maintenance	Flightline maintenance
OT-18	Medium	TCE, Hydrocarbons	Hydrocarbons	None	Airfield ops	Airfield ops	Airfield ops
OT-15 (Disposal site)	None	None	None	None	None	None	Possible storage

6.13
Remedial Actions

RA sites have been identified for the FY 1994 through FY 1996 years. The goal is to have all sites into RA by calendar year 2000.

6.14
Review of Selected Technologies for Application of Expedited Solutions

AFBCA/OL-H is currently working with the AFCEE in order to determine and select the best available technologies.

6.15
Hot Spot Removals

6.16
Identification of Clean Properties

Will be identified after sites have been undergoing remedial efforts.

6.17
Overlapping Phases of the Cleanup Process

In some instances, RD/RA phases will be performed concurrently with IRA phases.

6.18
Improved Contracting Procedures

The majority of contracts will be managed by the AFCEE.

6.19
Interfacing with the Community Reuse Plan

A community relations plan was developed; however, the base will be occupied by the Navy in FY 1996.

6.20
Bias for Cleanup Instead of Studies

Studies have been shortened in an effort to proceed with action.

Table 6-2. Human Health Standards

Contaminant	Concentration Level (µg/l)

Table 6-3. Surface Water Standards

Constituent/Parameter	Concentration Limit/Criteria
Criteria for Domestic Water Support Waters	
Radionuclides	

6.21
Expert Input on Contamination and Potential Remedial Actions

AFCEE is currently exploring these items through various environmental firms under contract.

6.22
Presumptive Remedies

Several remedies are being explored as part of the remedial process.

6.23
Partnering (Using Innovative Management, Coordination, and Communication Techniques)

Partnering has been ongoing with AF Plant 4 since FY 1993. Regulatory involvement consists of EPA, TNRCC, and local agencies.

6.24
Updating the EBS and Natural/Cultural Resources Documentation

A final EBS was distributed for comment October 93.

6.25
Implementing the Policy for On-Site Decision Making

As part of the BCT, decision making was identified as an integral part of the overall effort.

TAB

APPENDIX A

Appendix A

Fiscal Year Funding Requirements/Costs

TAB

APPENDIX B

Appendix B

Installation Environmental Restoration Documents Summary Tables

Table B-1. Project Deliverables
Page 1 of 2

Year	Phase	Project Title	Report #	Sites Examined	Deliverable Date/By Whom
1984	I	Records Search	1	LF-01, LF-02, LF-03, LF-04, LF-05, LF-06, WP-07, FT-08, FT-09, SD-10, WP-11, OT-12, ST-16, SD-13, ST-14, OT-15 (SWMU 65)	February 1984, CH_2M Hill
1986	II	Phase II, Stage 1	2	LF-01, LF-03, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, ST-14, OT-15 (SWMU 65)	October 1986, Radian Corporation
1989	RFA	RCRA Facility Assessment PR/VSI Report	3	LF-01, LF-02, LF-03, LF-04, LF-05, LF-06, WP-07, FT-08, FT-09, SD-10, WP-11, OT-12, SD-13, ST-14, OT-15 (SWMU 65), OT-15 (SWMU 60)	March 1989, A.T. Kearney, Inc.
1989	RI/FS	Remedial Investigation/Feasibility Study, Stage 2	4	LF-01, LF-03, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, ST-14, OT-15 (SWMU 65), ST-16	April 1989, Radian Corporation
1990	RI/FS	Decision Paper	5	FT-08	April 1990, Radian Corporation
1990	RI/FS	Decision Paper	6	FT-09	April 1990, Radian Corporation
1990	RI/FS	Decision Paper	7	SD-10	April 1990, Radian Corporation
1990	RI/FS	Decision Paper	8	OT-15 (SWMU 65)	April 1990, Radian Corporation
1991	RI/FS	Decision Paper	12	OT-12	May 1991, U. S. Air Force
1991	RFI	RCRA Facility Investigation Work Plans	13	LF-01, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, OT-15 (SWMU 65)	May 1991, COE
1991	NFADD	Request for Dismissal	14	FT-08, OT-12	July 1991, COE
1991	RI/FS	Remedial Investigation for East Area Groundwater Site	16	LF-01, SD-13, ST-14, ST-16	October 1991, Radian Corporation
1991	RI/FS	Feasibility Study for East Area Groundwater Site	17	LF-01, SD-13, ST-14, ST-16	October 1991, Radian Corporation
1991	RI/FS	Remedial Investigation for Flightline	18	LF-04, LF-05, WP-07, FT-09	October 1991, Radian Corporation

Table B-1. Project Deliverables
Page 2 of 2

Year	Phase	Project Title	Report #	Sites Examined	Deliverable Date/By Whom
1991	RI/FS	Feasibility Study for Flightline	19	LF-04, LF-05, WP-07	October 1991, Radian Corporation
1991	RFI	RCRA Work Plan	20	SD-13	October 1991, COE
1992	RFI	RCRA Facility Investigation Remediation Plan	21	WP-07	January, 1993, COE
1992	RFI	RCRA Facility Investigation Work Plan	22	LF-06	April, 1992, COE
1990	RI/FS	Decision Paper	9	ST-16	April 1990, Radian Corporation
1991	RI/FS	Decision Paper	10	LF-02	May 1991, U.S. Air Force
1991	RI/FS	No Further Action Decision Document	15	LF-01	September 1991, U.S. Air Force
1991	RI/FS	Decision Paper	11	WP-11	May 1991, U.S. Air Force

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Table B-2. Site Deliverables

Site ID (WIMS-ES)	PA/SI	RI/FS	RD/RA	Close Out	IRA	LTM	NFRAP	DD
LF-01	1, 2, 3	4, 16, 17	13					15[a]
LF-02	1, 3[a]							10[b]
LF-03	1, 2, 3[a]	4						
LF-04	1, 2, 3	4, 18, 19	13					
LF-05	1, 2, 3	4, 18, 19	13					
LF-06	1, 3		22					
WP-07	1, 2, 3	4, 18, 19	13, 21					
FT-08	1, 2, 3	4	13					5[a], 14
FT-09	1, 2, 3	4, 18	13					6[c]
SD-10	1, 2, 3	4	13					7[c]
WP-11	1, 3[a]							11[b]
OT-12	1, 2, 3	4	13					12[a], 14
SD-13	1, 2, 3	4, 16, 17	13, 20					
ST-14	1, 2, 3	4, 16, 17						
OT-15 (SWMU 60)	3							
OT-15 (SWMU 65)	1, 2, 3	4	13					8[a]
ST-16	1	4, 16, 17						9[d]
OT-18								
DP-17								
East Area Groundwater Site								

Notes: (a) NFA approved.
(b) RFA had previously eliminated site from further evaluation.
(c) RA approved.
(d) Not approved.

Table B-3. Technical Documents/Data Loading Status Summary

Date	Title	Sites	Contractor	Service Center	IRPIMS Status
10/86	IRP Phase II, Stage 1	LF-01, LF-03, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, ST-14, OT-15 (SWMU 65)	Radian Corp.	AFCEE	Loaded
10/88	IRP Phase II, Stage 2 (Interim)	LF-01, LF-03, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, ST-14, OT-15 (SWMU 65), ST-16	Radian Corp.	AFCEE	Estimated completion of loading, November 1993
4/89	IRP Phase II, Stage 2	LF-01, LF-03, LF-04, LF-05, WP-07, FT-08, FT-09, SD-10, OT-12, SD-13, ST-14, OT-15 (SWMU 65), ST-16	Radian Corp.	AFCEE	Estimated completion of loading, November 1993
5/89	IRP Phase II, Stage 2, WSA-1	OT-15 (SWMU 65)	Radian Corp.	AFCEE	Estimated completion of loading, November 1993
9/90	IRP Stage 2 Feasibility Studies and Remedial Investigations (Interim)	LF-01, LF-04, LF-05, WP-07, FT-09, SD-13, ST-14, ST-16	Radian Corp.	AFCEE	Estimated completion of loading, November 1993
10/91	IRP Stage 2 Feasibility Studies and Remedial Investigations (Interim)	LF-01, LF-04, LF-05, WP-07, FT-09, SD-13, ST-14, ST-16	Radian Corp.	AFCEE	Estimated completion of loading, November 1993
4/90	IRP Remedial Investigation/ Feasibility Study Decision Paper, Site 13	SD-10	Radian Corp.	AFCEE	To be determined

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APPENDIX C

Appendix C

Decision Document/ROD Summaries

Appendix C
Decision Document/ROD Summaries

Carswell Air Force Base has 19 Installation Restoration Program sites. Decision Documents (DDs) for which a remedial action was given a notice to proceed by the Texas Water Commission were prepared for two sites, FT-09 and SD-10. Summaries of the DDs for these sites are presented in this Appendix. A listing of DDs is presented in Appendix B, Table B-1, Project Deliverables.

US Air Force Installation Restoration Program
Remedial Investigation/Feasibility Study
Study Site 12, Carswell AFB, Texas
Decision Paper

April 1990

Site History/Description:

Site FT-09, the Fire Department Training Area 2, is located between the north-south taxiway and the radar facility. It is a gravel-lined fire ring with a low earthen berm. Fire training exercises have been performed here since 1963. Two tanks at the site have been used to store flammable liquids associated with fire training exercises, an aboveground tank to store fuel, and an underground tank to store waste oils and solvents.

Soil samples analyzed during IRP RI/FS revealed benzene, ethyl benzene, xylenes, 2-methylnaphthalene, 4-methylphenol, phenol, and naphthalene in the surface soils beneath the site, and in a sand strata 24 feet beneath the surface just above the water table. Petroleum hydrocarbons were detected in the groundwater.

Although this site did not pose an immediate and direct health hazard, remedial action was recommended to reduce the risks associated with the site. The alternative control measures that were considered are listed below:

1. No further action.
2. Excavate 2 feet of contaminated soil within the berm and aerate on site.
3. Excavate 2 feet of contaminated soil within the berm and dispose of it in a landfill.
4. Excavate 2 feet of contaminated soil within the berm and incinerate off site.
5. Excavate soil within the berm to bedrock and dispose of it in a landfill.
6. Excavate 2 feet of contaminated soil within the berm and aerate on site; treat deeper soil in situ.
7. Excavate 2 feet of contaminated soil within the berm and dispose of it in a landfill; treat deeper soil in situ.

Selection of Alternative 2 was recommended for the remedial action for this site.

Selected Remedial Action:

The Texas Water Commission gave a notice to proceed on Alternative 2.

Performance Standards or Goals: Not applicable.

Institutional Controls: Not applicable.

US Air Force Installation Restoration Program
Remedial Investigation/Feasibility Study
Site 13, Carswell AFB, Texas
Decision Paper

April 1990

Site History/Description:

Site SD-10, the Flight Line Drainage Ditch, received runoff from the flight line area and discharge from the aircraft wash racks and from the fuel systems shop. The ditch is entrenched 5 feet below surrounding land surfaces, and is partially unlined and partially lined with concrete.

Soil and sediment samples from the ditch were collected during IRP remedial investigation/feasibility studies. Analysis revealed low concentrations of volatile and semivolatile organic compounds in the unlined portion of the ditch, concentrations of petroleum hydrocarbons in all soil samples, and above normal and expected concentrations of cadmium, lead, selenium, and arsenic.

Although the ditch did not pose an immediate and direct health hazard, remedial action was recommended to reduce risks associated with the site. The alternative control measures that were considered are listed below:

1. No further action.
2. Excavate the contaminated soil and dispose of it in a landfill.
3. Excavate the contaminated soil and incinerate it.

Selection of Alternative 2 and installation of a concrete liner in the unlined portion of the ditch to prevent further contamination were recommended for the remedial action for this site.

Selected Remedial Action:

The Texas Water Commission gave a notice to proceed on an additional alternative to excavate the contaminated soil and treat it on base.

Performance Standards or Goals: This section not applicable.

Institutional Controls: This section not applicable.

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APPENDIX D

Appendix D

No Further Response Action Planned (NFRAP) Summaries

Appendix D
No Further Response Action Planned (NFRAP) Summaries

Carswell Air Force Base has 19 Installation Restoration Program sites. Decision Documents (DDs) for which no further response actions were approved by the Texas Natural Resources Conservation Commission were prepared for Sites FT-08, OT-12, and OT-15 (solid waste management system 65). Summaries of the (DDs) for these sites are presented in this appendix. A listing of DDs is presented in Table B-1, Project Deliverables.

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Decision Summary
Technical Document To Support
No Further Action
US Air Force Installation Restoration Program
Site 11, Fire Department Training Area 1
Carswell AFB, Texas

April 1990

Site History/Description:

Site FT-08 was the primary fire training pit used prior to 1963. It is located in the southern part of Carswell AFB. Waste oils, contaminated fuels, and solvents were burned here during training exercises several times a month. The site is now a level, gravel-surfaced area, and is covered with grass.

Remedial investigations of the site included installing monitoring wells, sampling soil and groundwater, and geophysical surveys. The investigations indicated that volatile organic compounds were not detected within the upper zone groundwater, water quality parameters and metal concentrations were within expected and typical ranges, and low levels of TCE were found in soils at the center and north of the site.

A baseline risk assessment was performed to determine the criteria for site remediation. The assessment determined there was no substantial current or future risk to public health from this site. The recommended alternative was no further action for this site.

Selected Remedial Action:

The Texas Water Commission approved no further action for this site on 17 December 1991.

Performance Standards or Goals: This section not applicable.

Institutional Controls: This section not applicable.

US Air Force Installation Restoration Program
Remedial Investigation/Feasibility Study
Carswell AFB, TX
Decision Paper
Site OT-12, Entomology Dry Well

16 May 1991

Site History/Description:

Site OT-12, the Entomology Dry Well, was used for disposal of insecticide rinseate between 1965 and 1981. The site is located in the east base area near the location of the entomology shed which was removed in 1981. Insecticides that were mixed in the shed included malathion, diazinon, dursban, and chlordane. The site has been regraded and its exact location is unknown.

Investigations at Site OT-12 indicated that chlordane and endrin aldehyde were detected in the soil concentrations below maximum contaminant levels. Based on the random low levels of pesticides found in the soil and the lack of pesticides found in the groundwater, the site was recommended for no further action. An alternative action, removal and disposal of contaminated soil was discussed, but because contamination was below U.S. EPA standards, it was not considered.

Selected Remedial Action:

The Texas Water Commission approved no further action for this site on 17 December 1991.

Performance Standards or Goals: This section not applicable.

Institutional Controls: This section not applicable.

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US Air Force Installation Restoration Program
Remedial Investigation/Feasibility Study
Weapons Storage Area, Carswell AFB, Texas
Decision Paper

April 1991

Site History /Description:

Site OT-15 (SWMU 65), the Weapons Storage Area (WSA) Disposal Site, is located at the Off-Site WSA, approximately 5 miles west of the main base. The facility was constructed in 1956, and includes two munitions inspection shops, 16 storage buildings, a radioactive waste disposal facility, and an explosive ordnance disposal range. An estimated 5 gallons to 10 gallons a year of waste cleaners and solvents (paint thinners and TCE) were disposed of on the ground behind the inspection shop.

Soil samples were collected from the ditch behind the inspection shop and analyzed as part of IRP RI/FS Stage 2 investigations. Principle contaminants at the site are antimony, selenium, and several volatile and semivolatile organic compounds. These occur in very low concentrations in the shallow soils of the ditch. The baseline risk assessment conducted during the RI/FS indicated that the site did not pose an immediate and direct health hazard, but remedial action was recommended to reduce risks associated with the site. The alternative control measures that were considered and evaluated are listed below:

1. No action.
2. Excavate contaminated soil and dispose of it in a landfill.
3. Excavate contaminated soil and incinerate it.

Selection of Alternative 2 was recommended as the remedial action for this site.

Selected Remedial Action:

Upon review of the DD, The Texas Water Commission approved Alternative 1 for this site on 17 June 1991.

Performance Standards or Goals: This section not applicable.

Institutional Controls: This section not applicable.

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APPENDIX E

Appendix E

Conceptual Site Model Data Summaries

Appendix E
Conceptual Site Model Data Summaries

To date, conceptual site models have not been developed. As remedial investigations continue, conceptual site models will be developed and incorporated into this Base Realignment and Closure Cleanup Plan.

Table E-1. Conceptual Site Model Data Summary, Site TBD, Chemical Standards Summary

					Contaminants, Chemical Standards, Exceedences, and Potential Restoration Goals					
Current Site ID (Past Site ID)	Site Description and Source Characterization	Background Concentrations[1]	Pathway Description	Potential Receptors	Media/Contaminant	ARAR	Source	Exceedence of ARAR	Risk-Based Restoration Goal[2]	Technology-Based Restoration Goal[3]

Table E-2. Summary of Background Concentrations, Vicinity of Carswell AFB, Texas
Tabulated March, 1994

	Soils			Sediment			Surface		
	No. Detect	Number Nondetect	Maximum	Number Detects	Number Nondetect	Maximum	Number Detects	Number Nondetect	Maximum

Table E-3. Total Metal Results for Background Groundwater Locations

	Unfiltered Results				Filtered Results		
Metal	Frequency of Detection	Maximum Concentration (μg/l)	Location of Maximum	Turbidity (NTUs)	Frequency of Detection	Maximum Concentration (μg/l)	Location of Maximum

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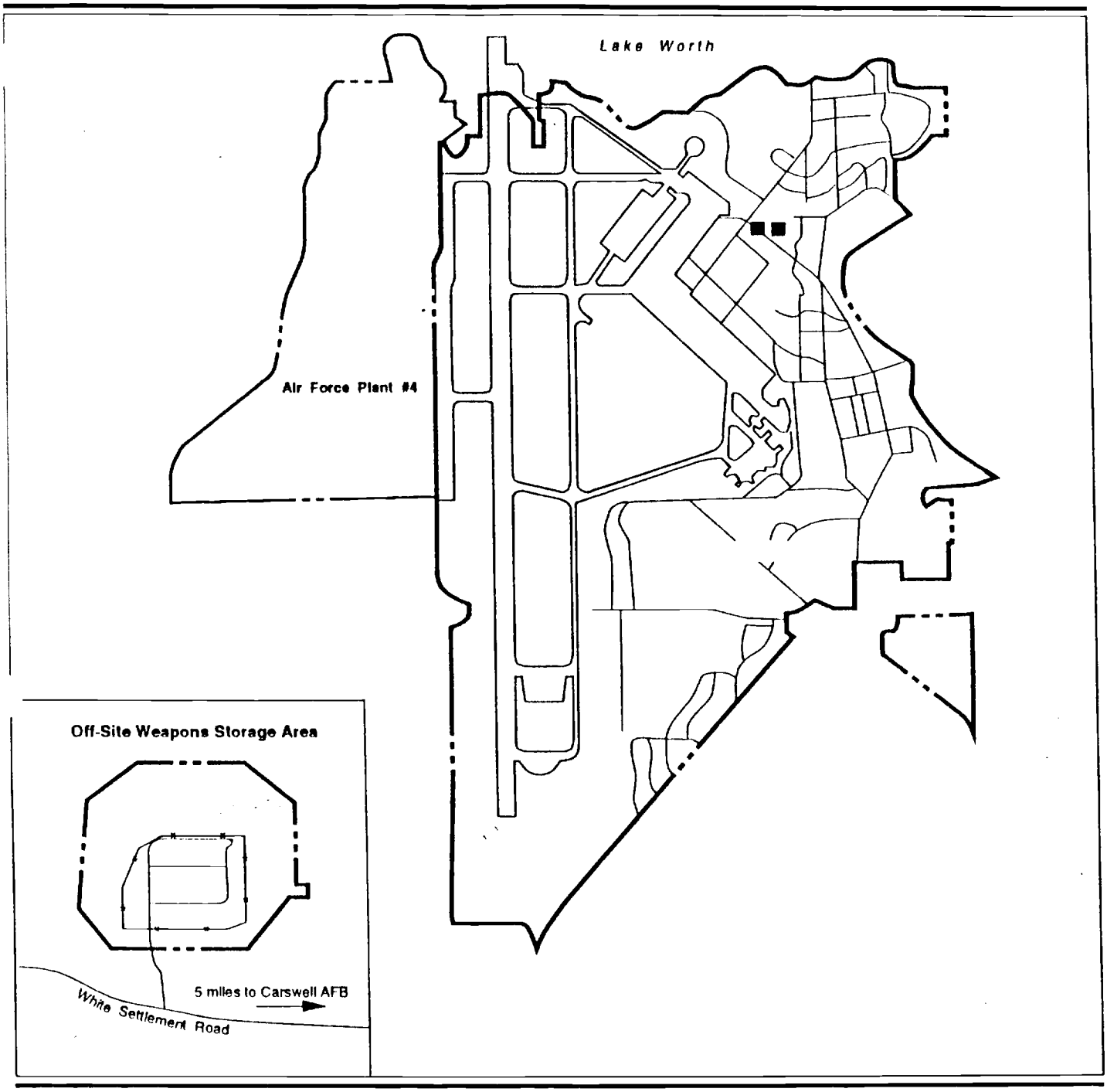
APPENDIX F

Appendix F

Additional Information



EXPLANATION

■ Location of AAFES

— - - — Base Boundary

— - - — Air Force Plant #4 Boundary

0 650 1300 2600 Feet

Location of Non-Air Force Tenants

Figure F-1

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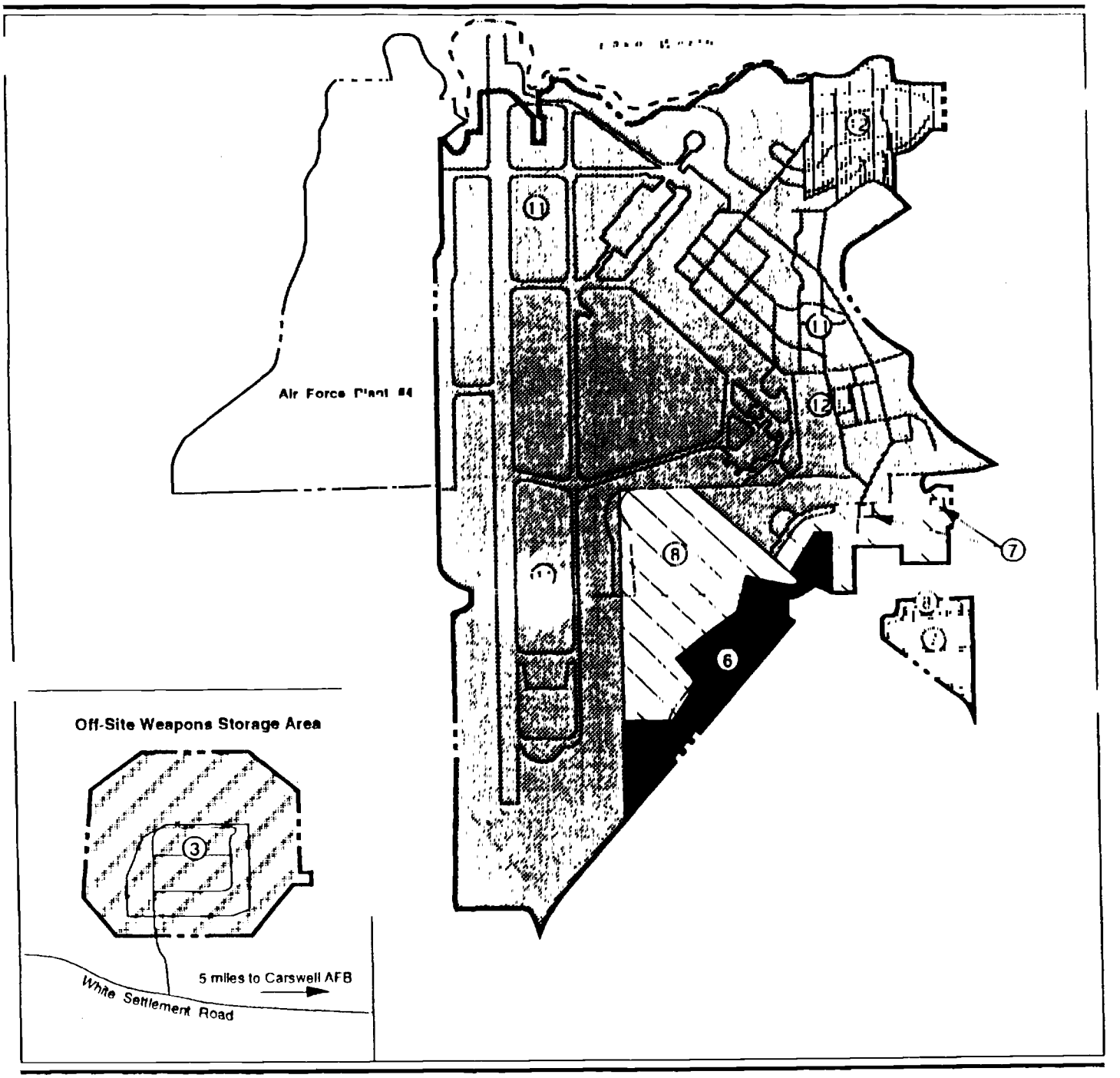

Proposed Action

Figure F-2

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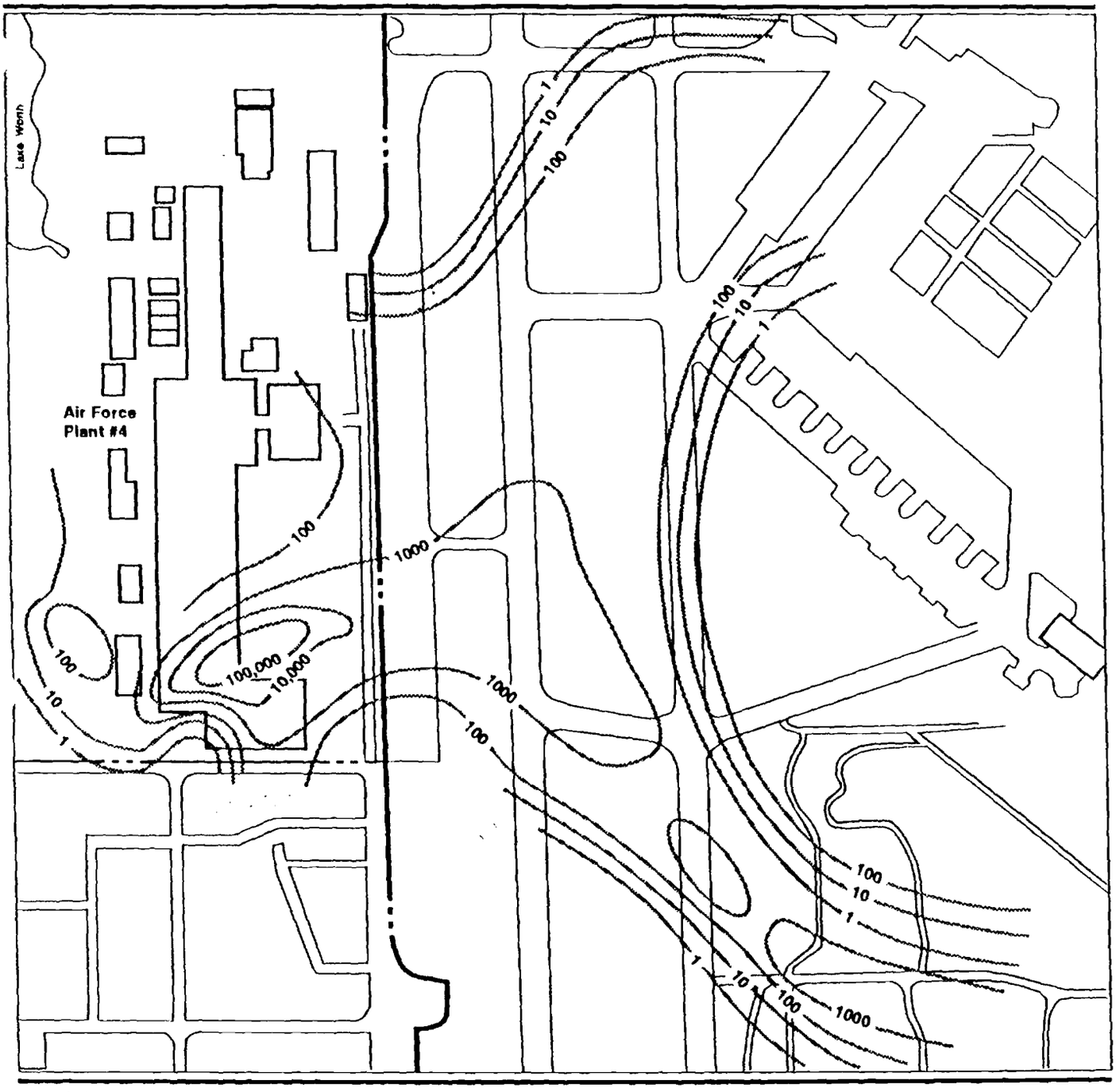

EXPLANATION

- TCE Concentration Contours (ug/L)
- Base Boundary
- Air Force Plant #4 Boundary

Concentrations of Principle Contaminants - Trichloroethylene Groundwater Plume

0 300 600 1200 Feet

Figure F-3

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APPENDIX G

Appendix G

RACER Estimates

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ADMINISTRATIVE RECORD

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ADMINISTRATIVE RECORD

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